

ST. MARK'S SCHOOL OF TEXAS

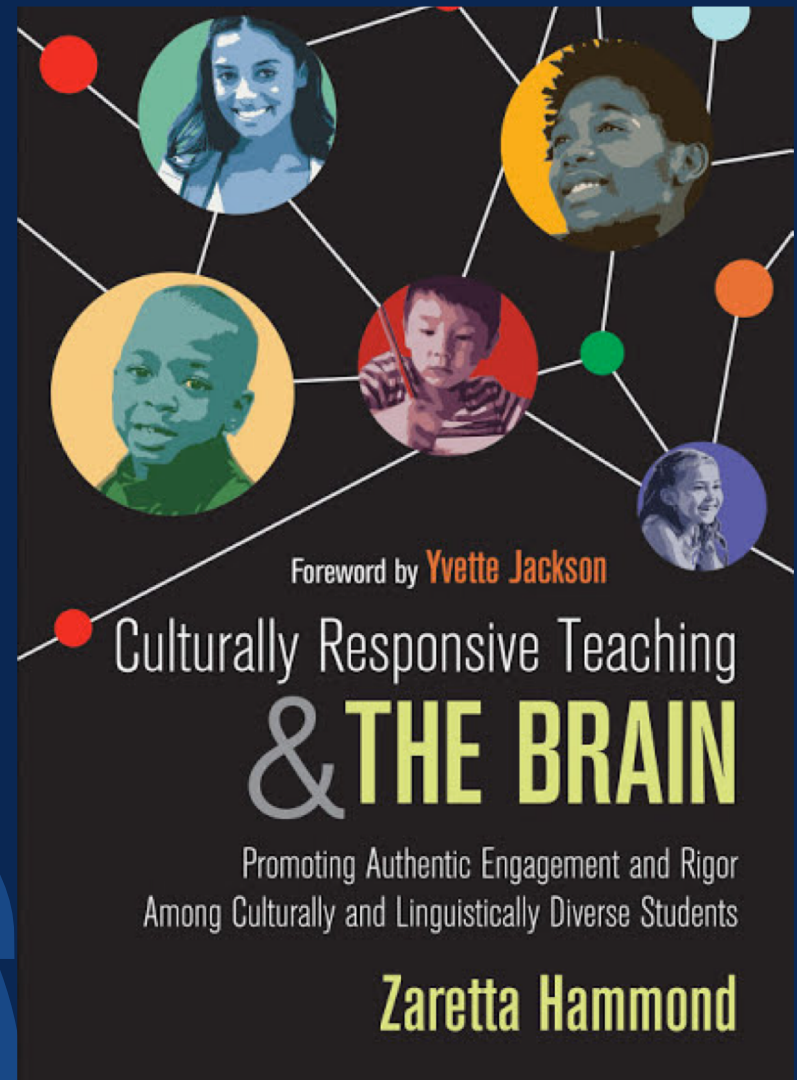


Culturally Responsive Math

Marjorie Curry

Culturally Responsive Teaching & The Brain

Using the Ready for Rigor framework, Zaretta Hammond's book gives educators a neuroscience-based approach to closing the achievement gap.



Triangle Vocabulary List

- Altitude
- Median
- Perpendicular Bisector



Culturally Responsive Teaching & The Brain

Culturally responsive teaching leverages the brain's memory systems and information processing structures. Many diverse students come from **oral cultural traditions**. This means their primary ways of knowledge transfer and **meaning-making** are oral and active. African American, Latino, Southeast Asian, and Pacific Islander communities all have strong oral cultures. Each of these cultural groups uses the brain's memory systems for turning inert information into useable knowledge. They use **memory strategies** to make learning sticky, like connecting information to a rhythm or music or by reciting it in interesting ways.

Triangle Vocabulary List - Revisited

■ Altitude

extends from a vertex and is perpendicular to the line containing the opposite side

■ Median

extends from a vertex to the **m**idpoint of the opposite side

■ Perpendicular Bisector

perpendicular to a side and bisects it

The Ready for Rigor Framework

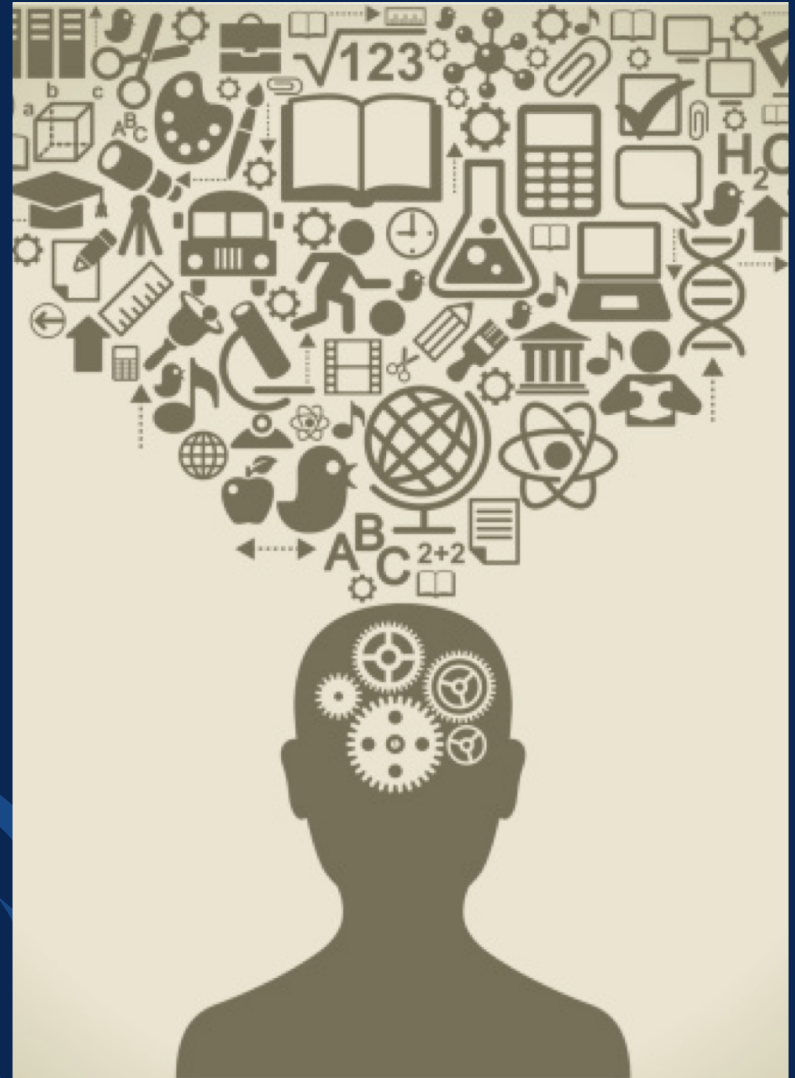
The Ready for Rigor framework consists of four strands:

- Awareness
- Learning Partnerships
- Information Processing
- Community Building



The Neuroscience of Information Processing

- Input
- Elaboration
- Application



Building Intellectual Capacity

- Ignite
- Chunk
- Chew
- Review



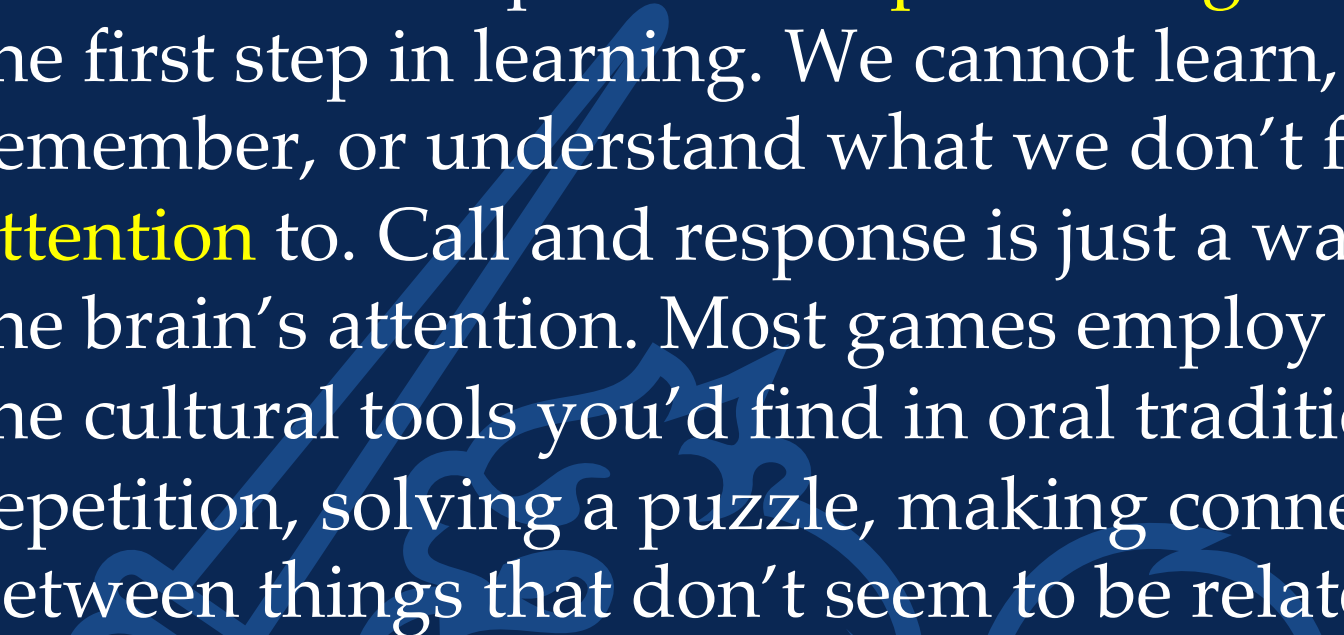
Elaboration

- Gamify it.
- Storify it.
- Make it social.
- Jennifer Gonzalez, educator and blogger.
- Cult of Pedagogy



Gamify It

Games are the power strategy for culturally-grounded learning because they get the brain's attention and require **active processing**. Attention is the first step in learning. We cannot learn, remember, or understand what we don't first **pay attention** to. Call and response is just a way to get the brain's attention. Most games employ a lot of the cultural tools you'd find in oral traditions – repetition, solving a puzzle, making connections between things that don't seem to be related.



Gamify It

- Sorting
- Grouping
- Bingo or Trigo (Lenape Regional High School District)
- Around the World

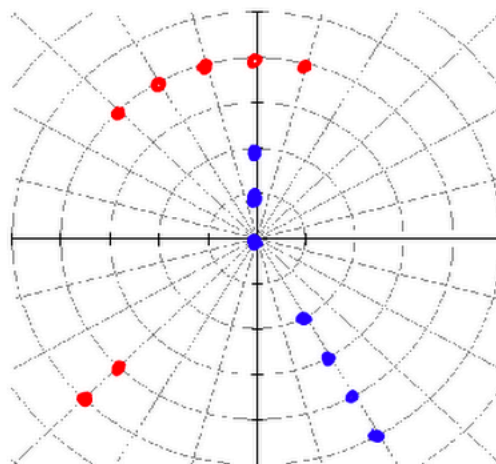


Gamify It

■ Polar Coordinates Battleship

Setup:

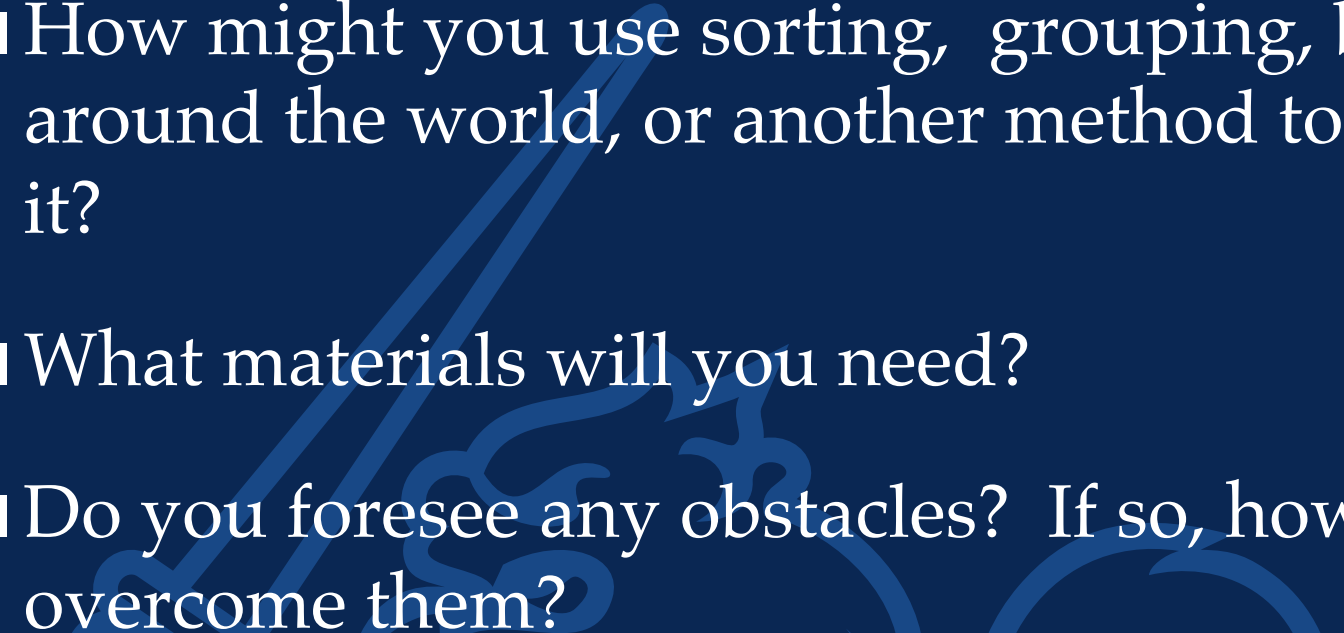
Each player distributes his or her fleet on battleships on their grid system. The ships are of sizes 2, 3, 4, and 5 points long. Use only points of intersection. The ships may be fanned out along the circle or straight along a line. Be careful so that your opponent cannot see your grid system. Here is an example of what a player's grid system might look like:



How the game is played:

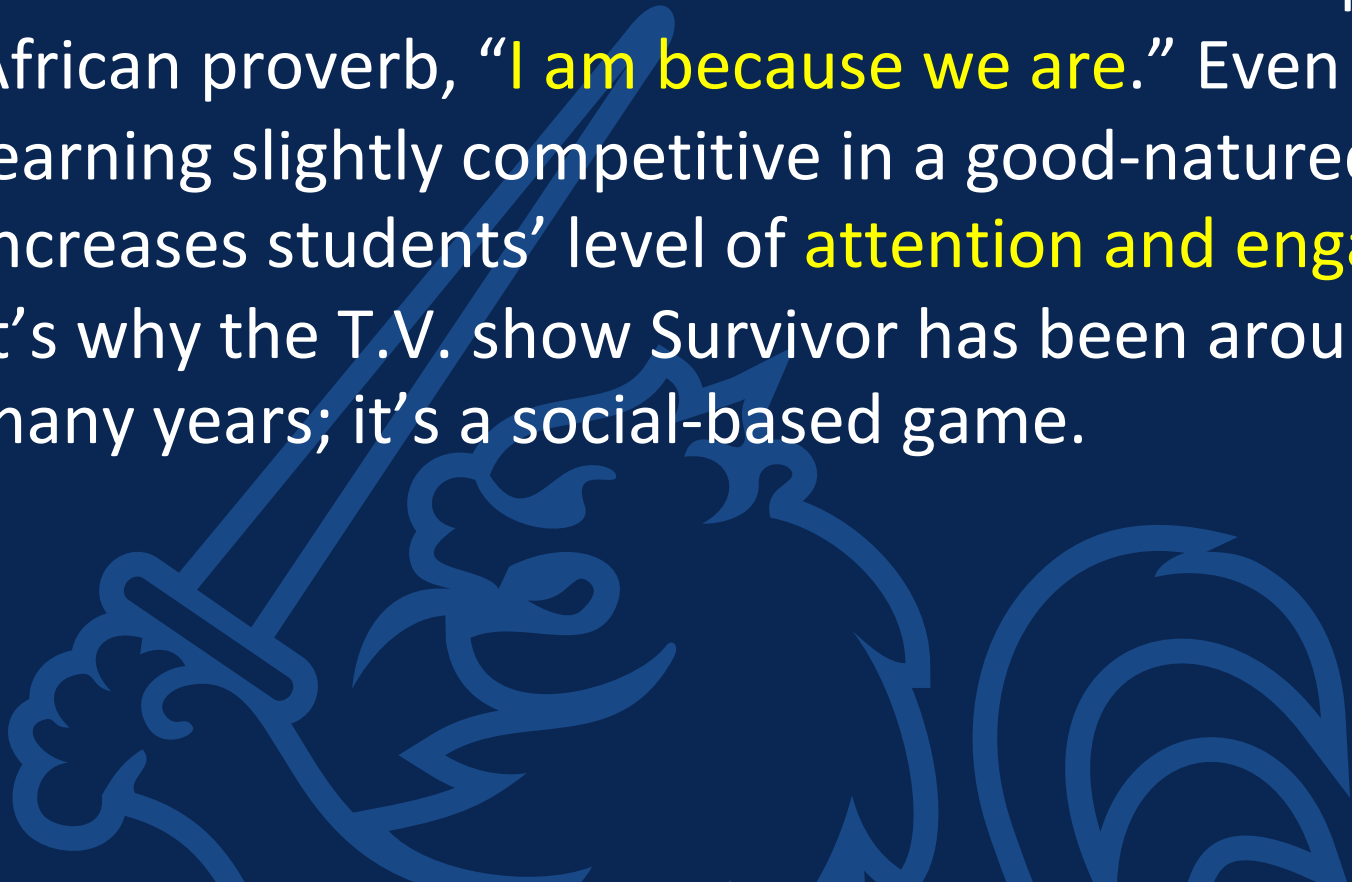
The younger of the two players goes first. He calls out the polar coordinates of his guess as to where he thinks an opponent's battleship might be. Opponent then says "Hit" or "Miss". A hit should be marked with an "X" and a miss with an "O" on the blank grid system in order to keep a record of the guesses. Players alternate turns.

Gamify It – Your Turn

- Think of a lesson coming up within the next two weeks.
 - How might you use sorting, grouping, bingo, around the world, or another method to gamify it?
 - What materials will you need?
 - Do you foresee any obstacles? If so, how will you overcome them?
- 

Make it Social

Organizing learning so that **students rely on each other** will build on diverse students' communal orientation. This communal orientation can be summed up in the African proverb, "**I am because we are.**" Even making learning slightly competitive in a good-natured way increases students' level of **attention and engagement**. It's why the T.V. show Survivor has been around for so many years; it's a social-based game.



Make it Social

- Row-Race
- Problem Presentations
- Line-Up
- Write and Solve
- Word-Play



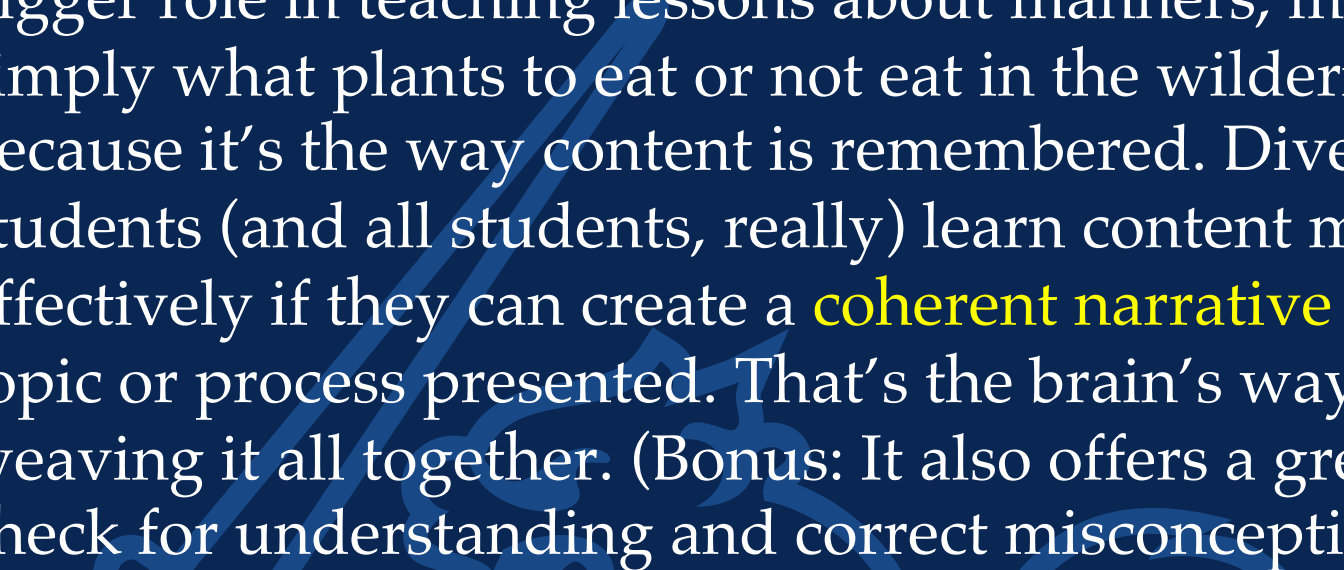
Make it Social -- Your Turn

- Think of a lesson coming up within the next two weeks.
- How might you use a row-race, problem presentations, a line-up, write and solve, or word play to make it social?
- What materials will you need?
- Do you foresee any obstacles? If so, how will you overcome them?



Storify It

The brain is **wired to remember stories** and to use the story structure to make sense of the world. That's why every culture has creation stories. In oral traditions, stories play a bigger role in teaching lessons about manners, morality, or simply what plants to eat or not eat in the wilderness because it's the way content is remembered. Diverse students (and all students, really) learn content more effectively if they can create a **coherent narrative** about the topic or process presented. That's the brain's way of weaving it all together. (Bonus: It also offers a great way to check for understanding and correct misconceptions.)



Storify It

- Quadratic Formula (Pop Goes the Weasel)

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

- Square Root Graph (Wheels on the Bus)

- King Solution

- Puh-puh-Please

Put Nice Napkins

Next to Plates

Storify It

- Flatland: A Romance of Many Dimensions by Edwin Abbott

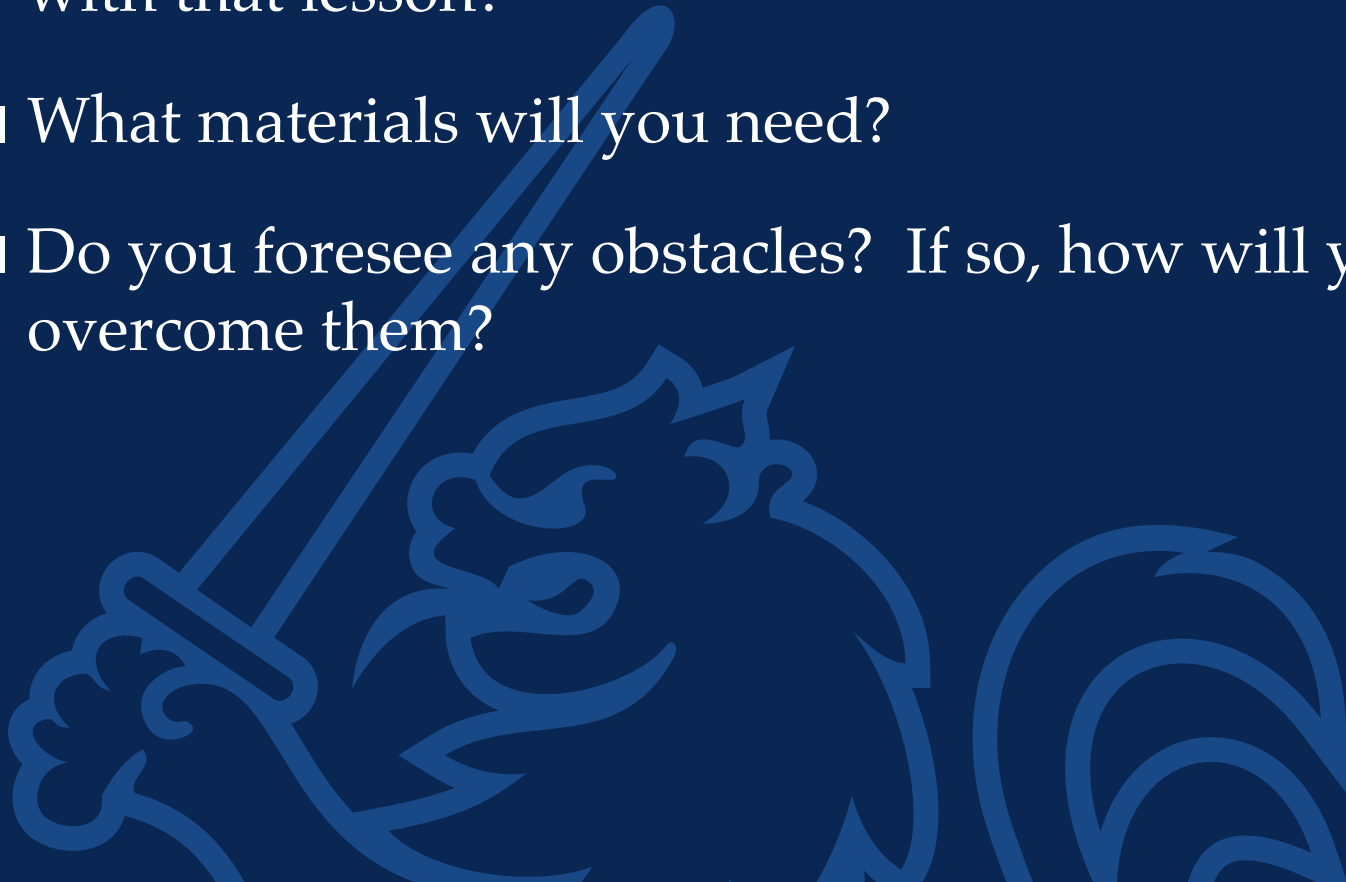
- Excerpt page 2 – 3

- Perspective



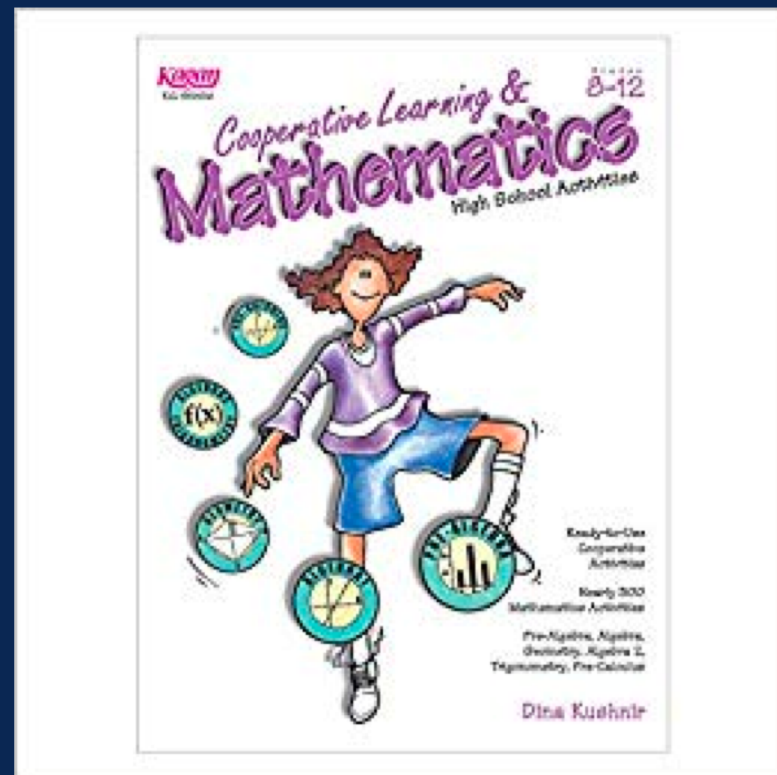
Storify It – Your Turn

- Think of a lesson coming up within the next two weeks.
- How might you use or your students use a story along with that lesson?
- What materials will you need?
- Do you foresee any obstacles? If so, how will you overcome them?



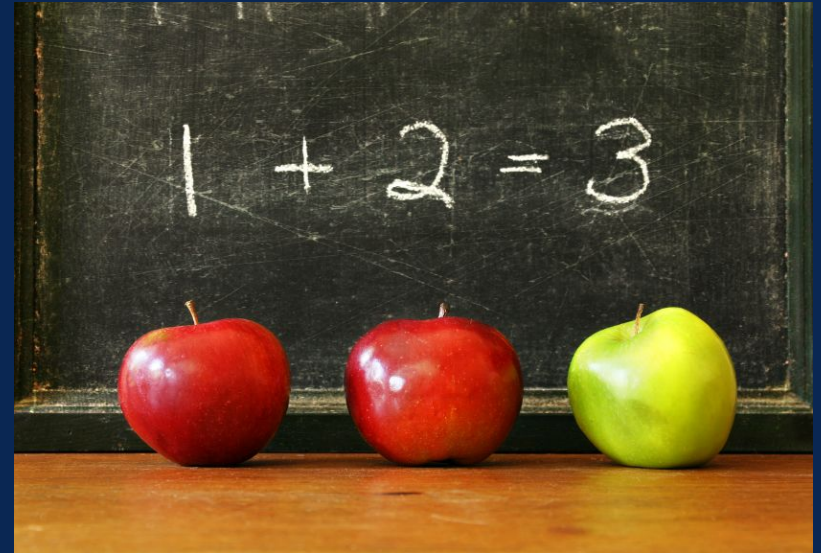
Another Resource

- Cooperative Learning & Mathematics High School Activities by Dina Kushnir



Summary

- **Culturally responsive teaching** doesn't have to be some performance the teacher does to entertain students. It doesn't have to mention race or reference culture at all. Instead, what makes a practice culturally responsive is that it **mimics students' own cultural learning tools**. These practices are helpful for all students, not just minority students.



Contact Information



Marjorie Curry

CurryM@smtexas.org

<https://www.linkedin.com/in/marjorie-curry-4202b5109/>