Kindergarten Institute Elementary STEMathematics

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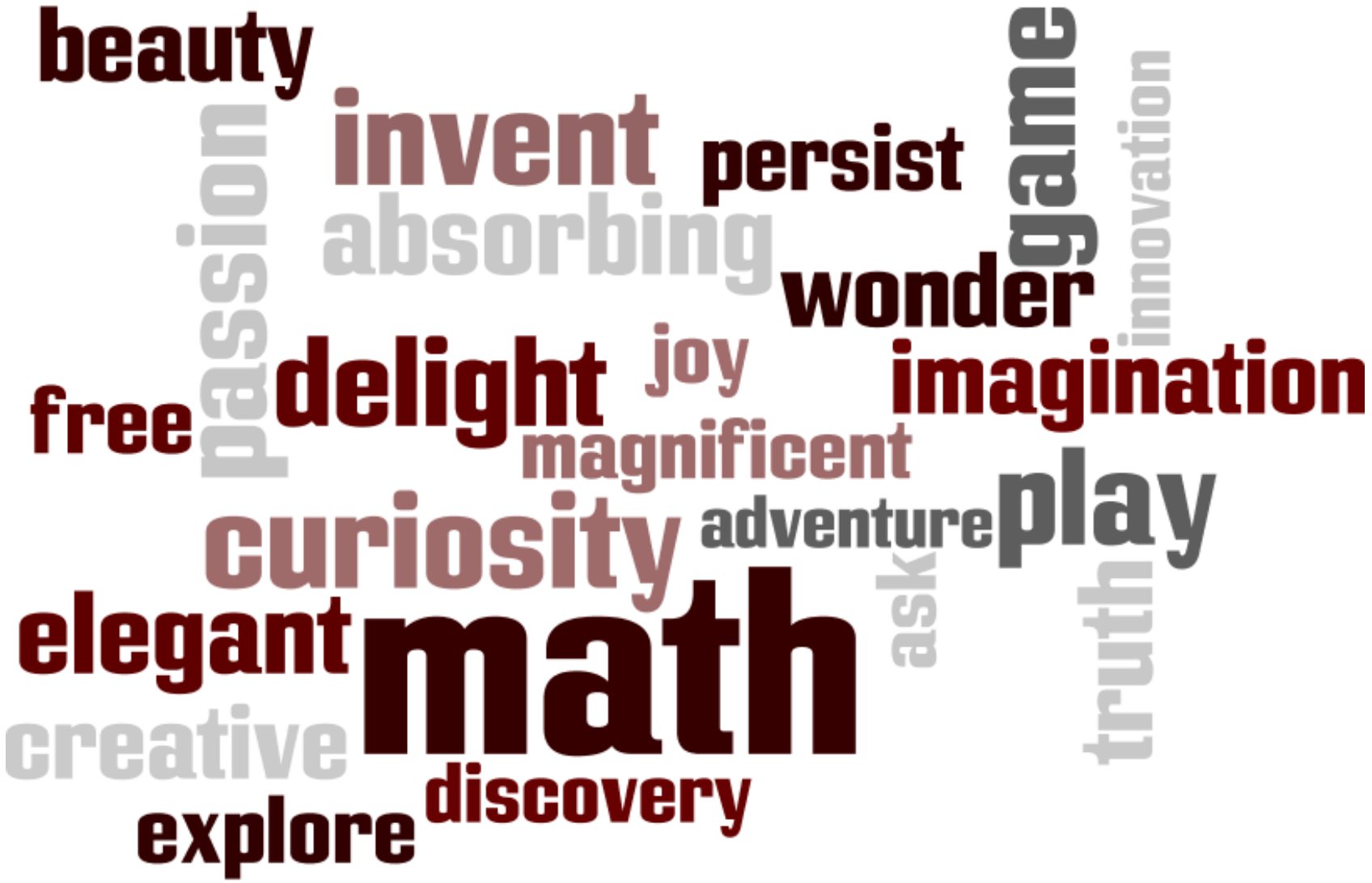
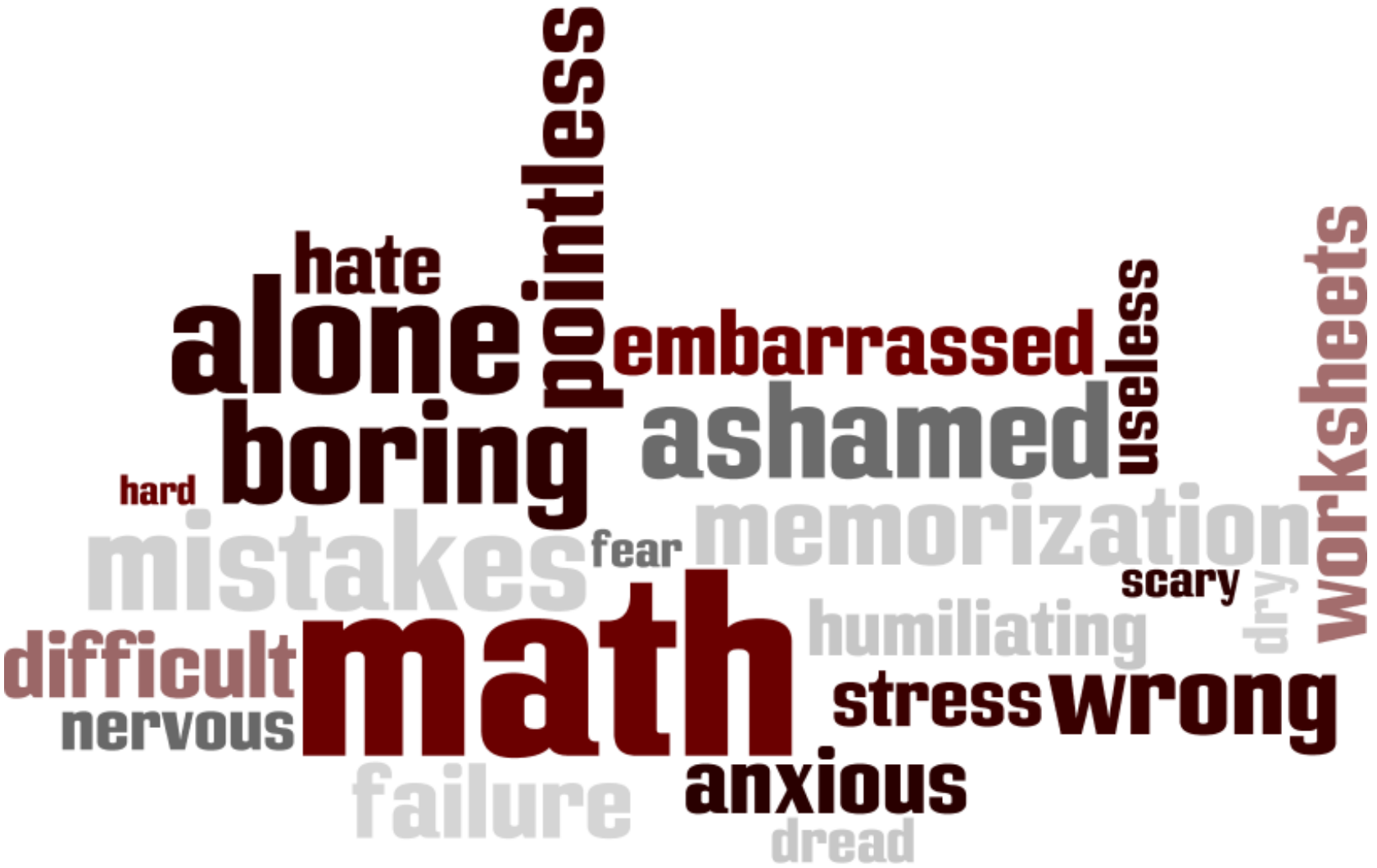
Our students will lead
and shape the future.



Courtesy of Tracy Zager



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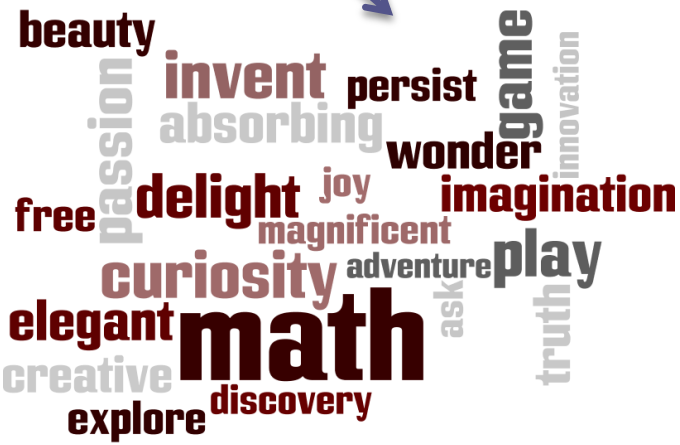
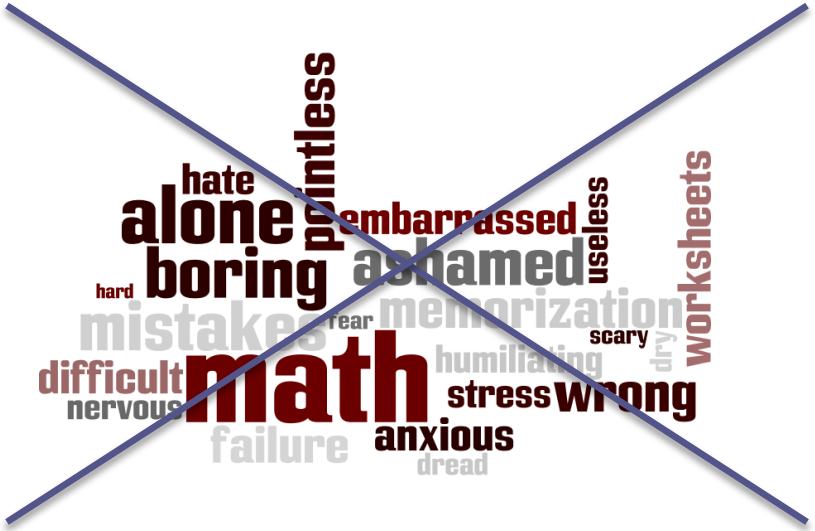
How do we make sure we have this and not this?





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How People Learn

3 Key Findings:

- Engage learners' initial preconceptions/prior understanding
- Provide learners with a conceptual framework in which to "place" their factual knowledge.
  - Concepts are given meaning by multiple representations
- Engage learners in self-monitoring and meta-cognition

Kindergarten Mathematicians

"Kindergarten is a powerful place for the learning of mathematics. Math is not about the acquisition of rote skill; it is about acting as mathematicians to figure out the world around us."

"Kindergarten is our opportunity to value our students' informal life experiences with math and the intuitive strategies they bring to problem solving."

Math Exchanges, 2011

Mathematician Statements

- Kindergartners are powerful mathematicians.
- Mathematicians explain and record their ideas in ways that other people can understand.
- Mathematicians check their work to make sure it makes sense.

Agenda

- Mathematizing our worlds
  - Talking math with your kids
  - Read-alouds
- Working towards independence
  - Problem solving
  - Count, count, count
  - Centers/stations
- District resources and support

Mathematizing Our Worlds

- Talking Math With Your Kids
  - What's going on in these conversations?
  - How did math get highlighted?
  - How do you take these conversations and mathematize the world around you?
  - Naming and defining things is important.

Mathematizing Books

- Bringing out the math in read-alouds

- Using books as a springboard for problem solving
- Problem situations from Common Core

Problem Solving

- Young mathematicians are much more capable than we think.
- We need to give them opportunities to make sense of problems.

Ladybugs: Noticing and Wondering

- 4 ladybugs were crawling around in the garden. 3 more ladybugs joined them.
- How many ladybugs were in the garden altogether?

Standards Alignment

- Content standards
- Standards for mathematical practice

Big Ideas In Counting

- Number names
- Order
- One-to-one correspondence (under what conditions?)
- Keeping track
- Cardinality (under what conditions?)
- Name-symbol relation
- Relative size
- Composition of number
- Base-ten structure
- Conservation of number

A Child's Counting

- As you watch take note of what this young mathematician *can* do.

Counting Collections

- With a partner, grab a bag of items and determine how you will count the items.
- You will each need to represent your count.

Why Count a Collection?

- Standards alignment
  - Content standards
  - Standards for mathematical practice

Growing Kindergarteners to Independence

- Centers/stations

- Geometry

Mathematics Instruction

- Starting the year off by building your mathematical community
  - First 10 Days or
  - Year Overview
  - Unit Map
- Examples of high-yield strategies:
  - Always, Sometimes, Never
  - Choral Counting
  - Counting Collections
  - Noticing and Wondering
  - Number Talks
  - Problems Without Numbers
  - Quick Images
  - True-False Equations

District Resources

- Curriculum Portal: http://www.everettsd.org/portal
- Instructional Guide and Year Overview
- Unit Maps
- Assessments

Future STEM Math PD

- Grade-alike
- Instructional Routines/Strategies

Reflections—Stop and Think!

- What do you want to remember when you go back to your school and get ready for the first day/week/month?