

Best Practices for Math

Contact Information: Lenny VerMaas, lennyvermaas@gmail.com Twitter @LennyVerMaas

Website <http://bit.ly/lennyv> "Lenny's Links" tab or

This document can be found <http://bit.ly/lennyvbestpractice>

Below are resources for looking at best practices for teaching and learning math.

The Most Important Consideration: What Will Be Best for Our Students

Here is a great place to start, Matt Larson, NCTM Ignite presentation "[Balancing the equation](#)"

First checkout and use nematerialsmatter.org.

From NCSM May 2020 [Materials Analysis Tool](#) and [graphic organizer](#) with links

Nebraska Standards

- [2015 vertical & horizontal](#)

NCTM, National Council of Teachers of Mathematics

- <http://nctm.org/>

Areas of Focus

- Understanding vs memorization
- More than one way to solve problem, multiple strategies
- Student discourse and talking about math processes

[April Kelley MTSS webpage](#)

What does good mathematics teaching look like?

- Marilyn Burns "[10 Big Math Ideas](#)" to enhance your students' ability to learn math.
- "Principles to Actions, Ensuring Mathematical Success for All" National Council of Teachers of Mathematics, NCTM 2014 [Eight Mathematics Teaching Practices](#) [NCTM links](#)
- [Document](#) with 12 beliefs from Principles to Action.
- [Beliefs Sort](#) is a document with the 12 beliefs
- [Principles to Action Executive Summary](#) from NCTM
- Phil Daro's [against answer getting](#). American Teachers: How can I teach my students to get the answer this problem? Uses mathematics they already know. Easy, reliable, works with the bottom half of the class and good for classroom management. Japanese: How can I use this problem to teach the mathematics of this unit?
- Common Core [Eight Mathematical Practices](#) from Common Core
- Dan Meyer, Teaching GREAT Dan Meyer, math needs a makeover. [Ted Talk](#) [Video 2 from ASCD](#)

- [Jo Boaler](#). Memorizers are the lowest achievers on assessments and other surprises. "We don't need students to calculate quickly in math. We need students who can ask good questions, map out pathways, reason about complex solutions, set up models and communicate in different forms."
- From Jo Boaler "[Six Things Teachers Can Do to Close the Math Achievement Gap](#)"
- Why kids should use fingers in [math class](#).

21st Century Learning

- Video "[Education Today and Tomorrow](#)"
- Student vs Learner - [The Housewarming](#)
- Student vs Learner - [The Quiz](#)

- Teacher Understanding and Growth Mindset Before Memorization [Blog Post](#)
- [Study](#) finds that students who report using memorization alone when studying math are successful with easier problems, but struggle with more difficult ones.
- [Understanding Subtraction](#) why understanding is better than memorizing 10 min video
- From Marilyn Burns
 - Another way to [Subtract](#)
 - Subtraction [Algorithm](#) gone bad
 - Subtract by [adding](#)
- Instead of seeing a mistake ask "[What are my students thinking?](#)"
- [Four purposes](#) to aim for when assigning math homework.

- Student vs Learner - [The Teacher](#)
- "[Shift Happens](#)" A look into the future of jobs

Spoon-feeding is to provide someone with so much help or information that they do not need to think for themselves.



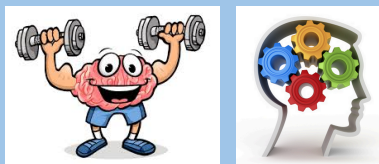
Instead of spoon feeding students help students to realize that making mistakes and struggle is an important step in learning.

[Bench Press Spotter Example](#)

Remember

- When students struggle only ask questions that do not give away the answer. @gfletchy
- We want to be as least helpful to students to the point short of where they don't die. @robertkaplinsky
- Help students learn that when you struggle is when your brain grow. @joboaler

Growth Mindset



Jo Boaler & Carol Dweck



What FAIL Really Stands For:

First
Attemp
In
Learning



The 3 "P" Word

Practice
Patience
Persistence and
Hard Work

Student Ownership

If what we are teaching isn't meaningful for our students, its a waste of our time and theirs.

- An opportunity to experience new learning
- An opportunity to learn from failure
- An opportunity to share their work
- An opportunity to learn by doing. (application)

Develop a Video Game Mentality



Video games allow students to fail safely, an opportunity to level up and opportunity to receive instant feedback

Best Practices Learning Math

- [Google Doc](#) Best Practices for Teaching Math
- Lotus Chart for [Best Practices for Teaching Math](#)
- Seward Presentation [Powerpoint Handout](#)
- Norris Presentation [Powerpoint](#)
- Aurora Presentation [PowerPoint PDF](#)
- [Math Practices Slides](#) from Heidi
- [ESU 10 Textbook Selection](#) (first evaluation)
- [Evaluation Hyperdoc](#) for Teachers with sample schedule
- [Selecting High Quality Textbooks](#)

Reports

- Independent Reviews of Educational Materials by Educators [EdReports](#)
- For an archive of all *Best Evidence in Brief* articles, searchable by topic or date, please see the [Best Evidence in Brief Index](#). For more on evidence-based education, visit our [Best Evidence Encyclopedia](#) website.
- [What Works Clearinghouse](#)
- [Intensive Intervention](#)
- [Evidence for ESSA](#)
- [Nebraska Instructional Materials Collaborative](#)

Textbook Adoption

- [Adopting Core Program](#)
- [Evaluation Tool](#)
- [Evaluation Tool 2](#)
- [Math Evaluation Tool](#) ESU 3
- [Head to Head compare](#)
- [Questions to consider](#)
- [More Questions](#)
- [Textbook Adoption Timeline](#)

From Josh Males Lincoln

- [Content Analysis Rubric](#)
- [Differentiation Rubric](#)
- [Task and Discourse Rubric](#)
- [Teacher Supports and Technology Rubric](#)