FOX CHAPEL AREA SCHOOL DISTRICT


# Jim Jones, Ed.D.
## Elementary Math Specialist & RtII Facilitator, Hartwood Elementary School Pittsburgh, PA


# Value-Added Student Growth & RtII/ MTSS Success: Teacher Practices, Beliefs, & Growth-Mindset Matter!

**Before we get started today…**
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@james_w_jones

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# LET'S TAKE A FEW MINUTES TO RESPOND TO ONE OF THE SURVEYS USED IN MY RESEARCH…

# ABOUT ME...

INDIANA UNIVERSITY OF PENNSYLVANIA

WALDEN UNIVERSITY

PHILADELPHIA URBAN SEMINAR EXPERIENCE EDUCATION

Pittsburgh Public Schools

THE NEW WILKINSBURG SCHOOL DISTRICT

WOODLAND HILLS SCHOOL DISTRICT

Fox Chapel Area School District

"EXCELLENCE IS NOT AN ACT, BUT A HABIT." -Aristotle

## ...THE REASON I SHARE...

**RtII FACILITATOR & MATHEMATICS SPECIALIST (K-5)** — August 2016-Present

**MATHEMATICS SPECIALIST & GIFTED/STEM TEACHER (K-5)** — August 2006-June 2016

**DOCTORAL GRADUATE ASSISTANT** — June 2010-May 2012

**MATHEMATICS CONTENT & INSTRUCTION COACH (K-8)** — June 2005-August 2006

**SIXTH GRADE TEACHER (Coach Mentorship, K-6)** — August 2002-June 2005

**SEVENTH GRADE MATH TEACHER (7-12)** — September 2001-June 2002

**LONG-TERM SUBSTITUTE TEACHER (K-8)** — March 1999-June 2001

# ABOUT YOU...

✓ **Elementary Teachers**

✓ **Math Coaches**

✓ **Math Directors**

✓ **Principals**

✓ **Curriculum Coordinators**

# LET'S TAKE A LOOK AT THE SURVEY RESULTS

**VOX VOTES ADMIN PAGE**

# Mindset Survey

Hong, Y. Y., Chiu, C. Y., & Dweck, C. S. (1995). Implicit Theories of Intelligence. In Efficacy, agency, and self-esteem (pp. 197-216). Springer US.

**Intelligence Mindset**
**(Growth Mindset**
**or Fixed Mindset)**

# My Main Man Mike
# Mental Math Genius
# 1st Grade Through Undergrad

# Why did I consider Mike a “Math Genius?”

68 + 46 = 114

32 * 5 = 160

- He could do mental math, quickly and accurately, ALWAYS had the RIGHT ANSWER.

- Our teachers consistently called on and praised Mike's ability…
… leading the rest of us to believe he was given a gift we were not.

- We never shared strategies, or talked about solving problems, AT ALL!

# My Point…

Students receive both explicit and implicit messages every day…

It is our duty to ensure that these messages are constructive and consistently recognize student effort and honor our students' unique abilities to learn …

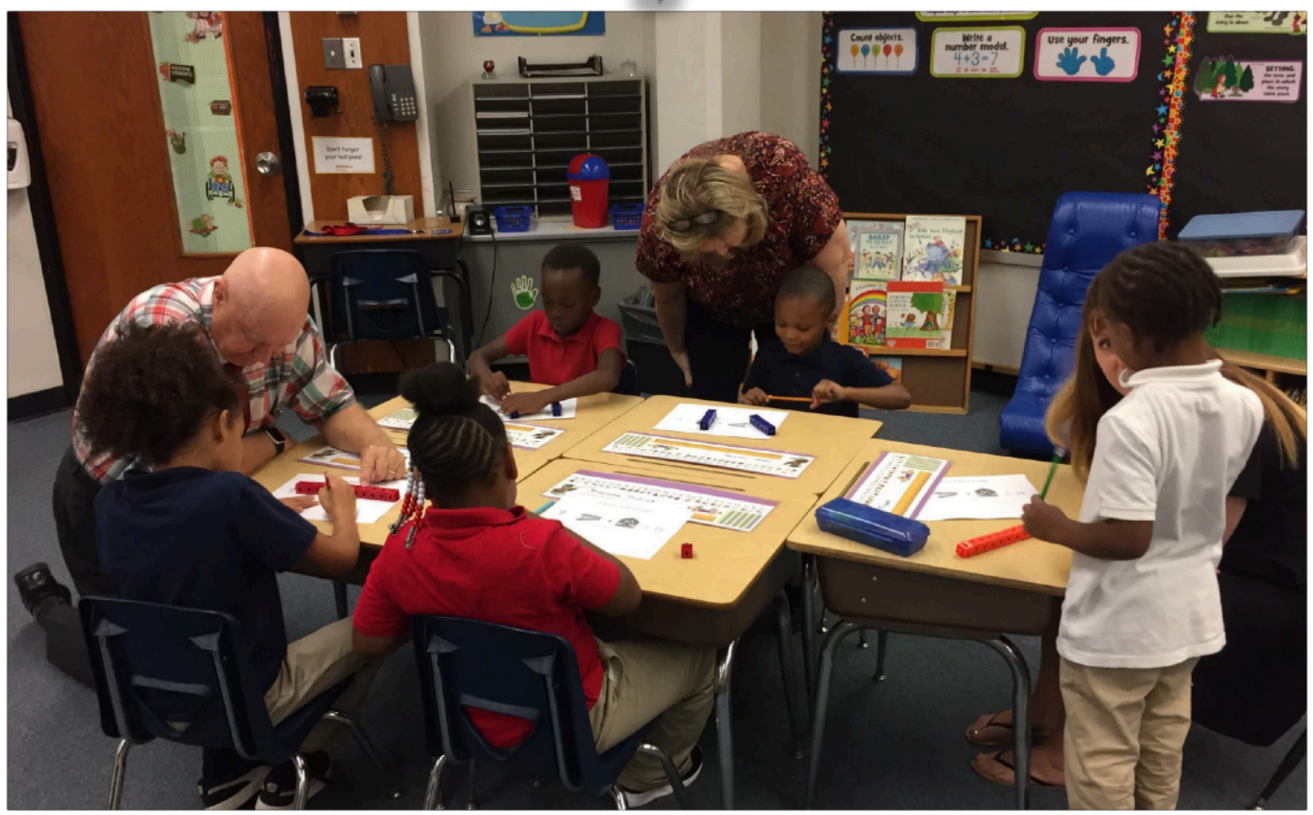
# But it doesn't happen in a vacuum!

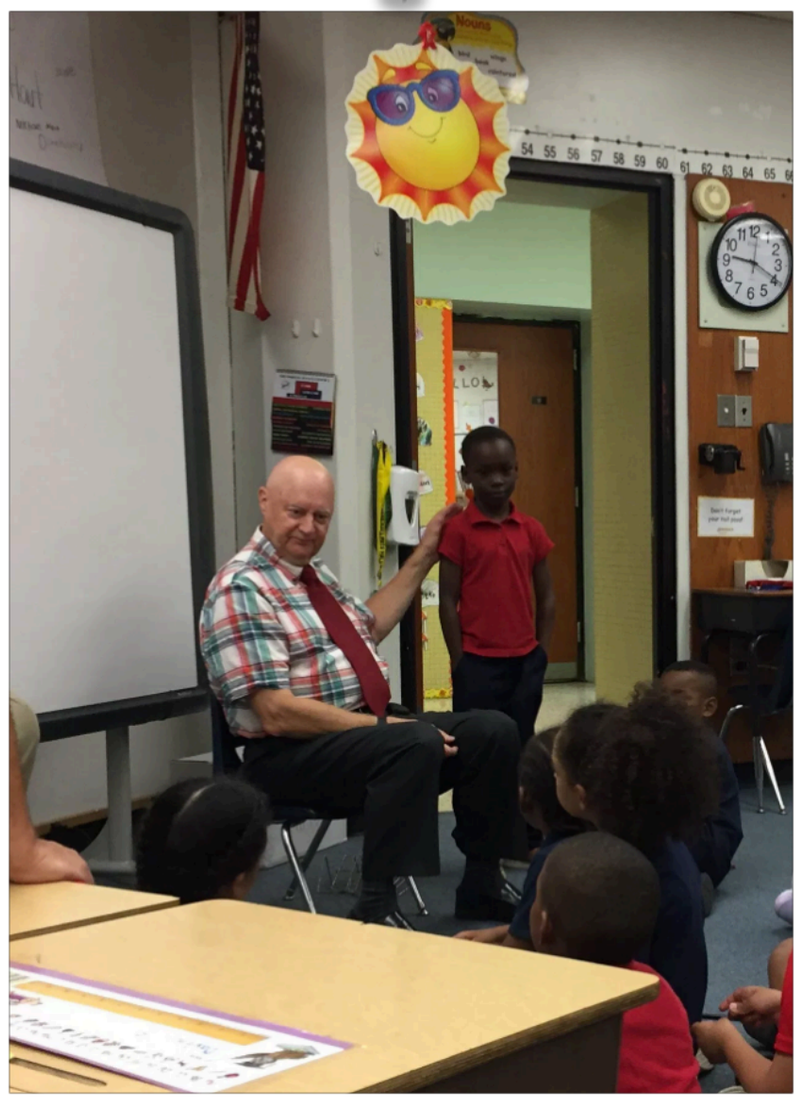
- Curriculum Matters
- Instruction Matters
- Pedagogy Matters
- Materials Matter
- Assessments Matter

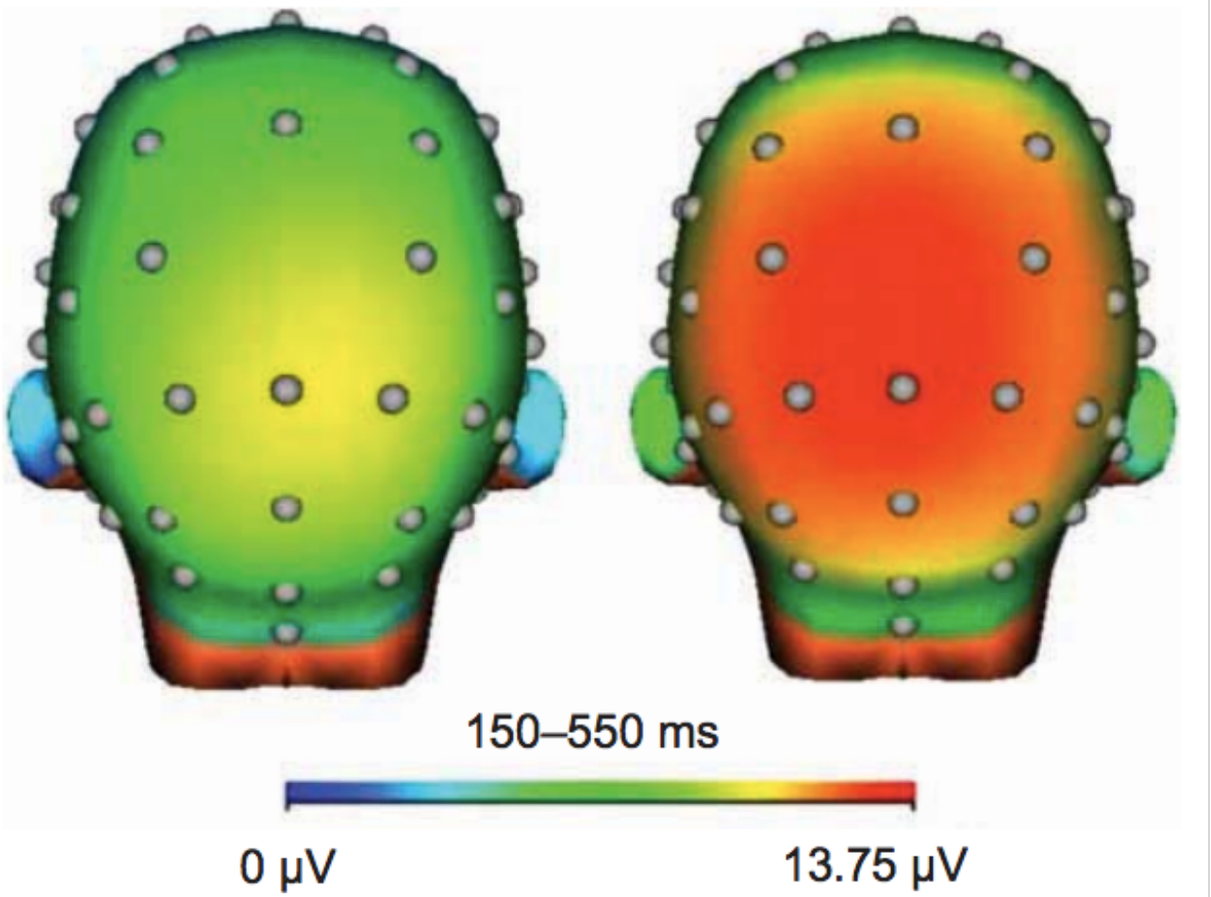
## The How & The Why…

# Dr. Larry Feldman,
# Professor Emeritus
# Indiana University of PA
## Editorial Panel - Mathematics Teacher (NCTM)

# Dr. Dan Miller, Retired Institute for Learning (University of Pittsburgh) Math Consultant




Fixed Mind-Set
Growth Mind-Set
150–550 ms
0 μV
13.75 μV


GROWTH

# “Achievement” & “Growth” Indicators

**Achievement** … purely relative to grade level/subject area standards.

NCLB Era & Forward- goal —100% Proficiency - Andrew Ho at the Harvard Graduate School of Education has called ***proficient*** a “weasel word” (Kamenetz, 2014).

**Growth** … relative to students’ “starting point” - based on students maintaining their position in the state-wide distribution of scores for each year (NCE Score.)

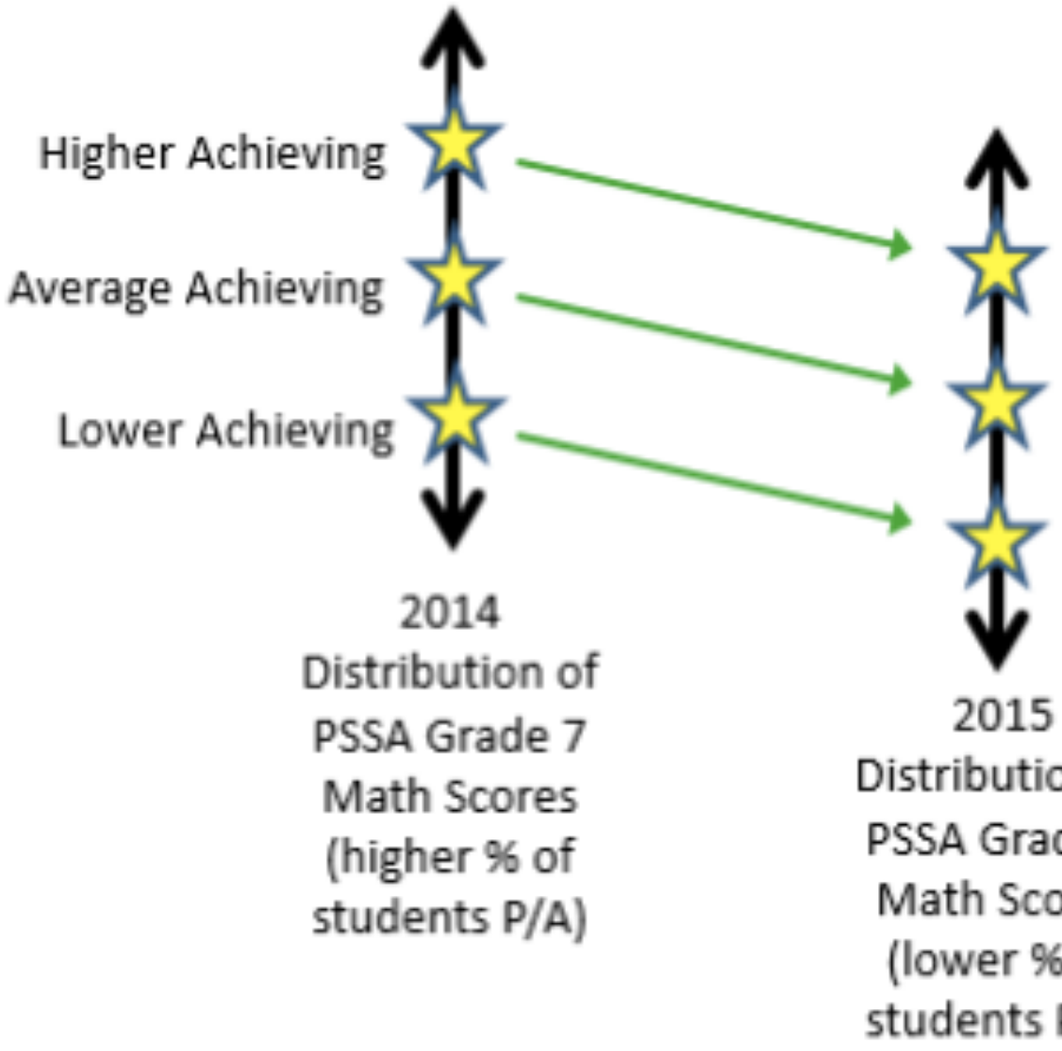
# Value-Added Student Growth (AGI - Dependent Variable)

Value-added student growth models …

"isolate the effects of outside factors—such as prior performance or student characteristics—from student achievement in order to determine how much value teachers, schools, and/or programs added to students' academic growth"

(Hull, 2007, p. 47).

# Transition of PA State Assessments




**THIS IS AN EXAMPLE ONLY!**

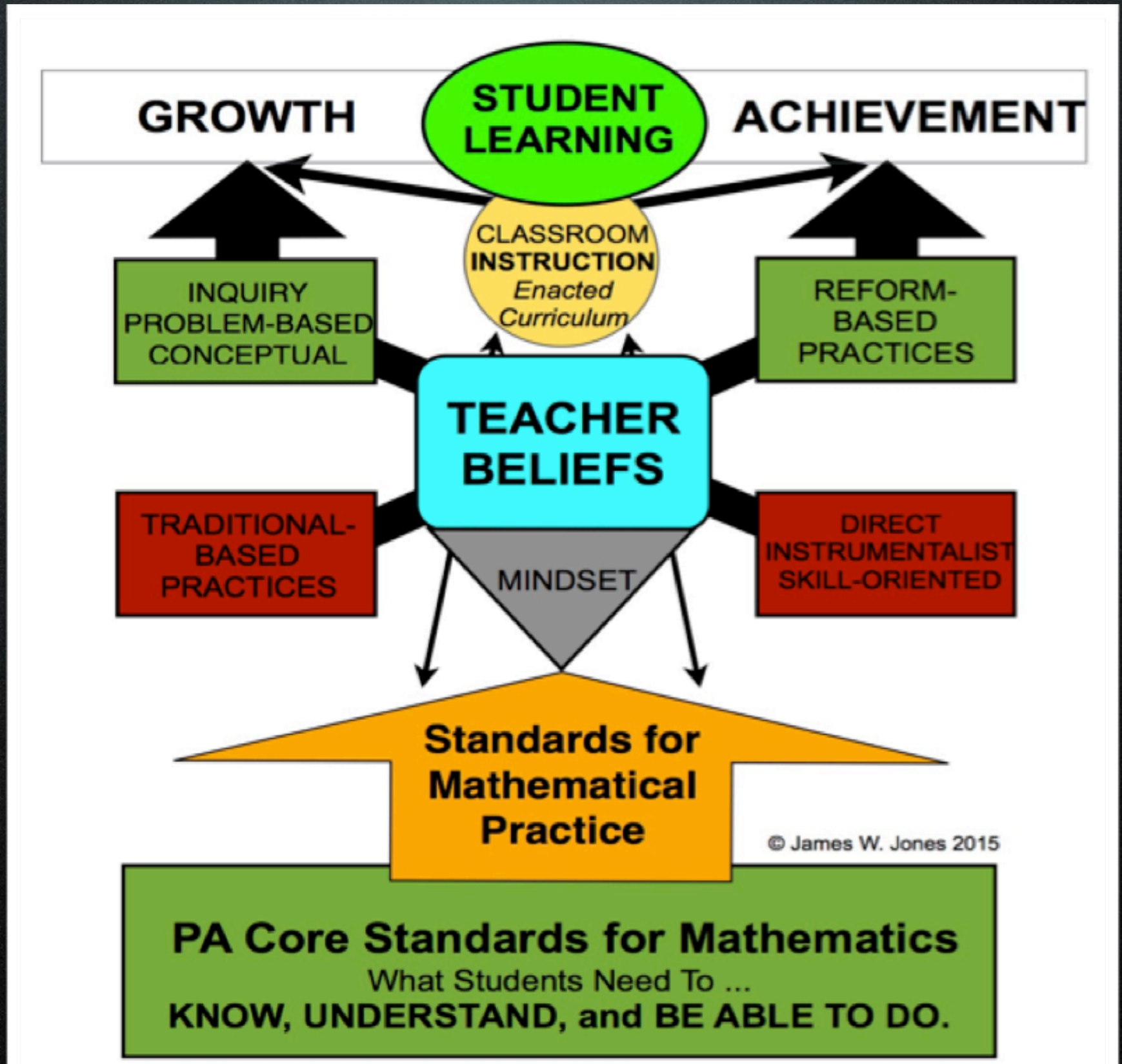
**Is the group of students (indicated by the yellow star) at the same RELATIVE position in the distribution of statewide scores from SY13-14 to SY14-15?**
**Yes = Green on PVAAS**

# AVERAGE GROWTH INDEX (AGI)

Table 7

*Average Growth Index (AGI)*. Reprinted with (pending) permission (PDE, 2016)

| School Level AGI Value | Score Description |
|---|---|
| Average Growth Index (AGI) = 0 | On average, the students in this school met the standard for PA Academic Growth. |
| Average Growth Index (AGI) > 0 | On average, the students exceeded the standard for PA Academic Growth. The farther the AGI is above 0.0, the more evidence there is that, on average, students in this school exceeded the standard for PA Academic Growth. |
| Average Growth Index (AGI) < 0 | On average, the students did not meet the standard for PA Academic Growth. The farther the AGI is below 0.0, the more evidence there is that, on average, students in this school did not meet the standard for PA Academic Growth. |

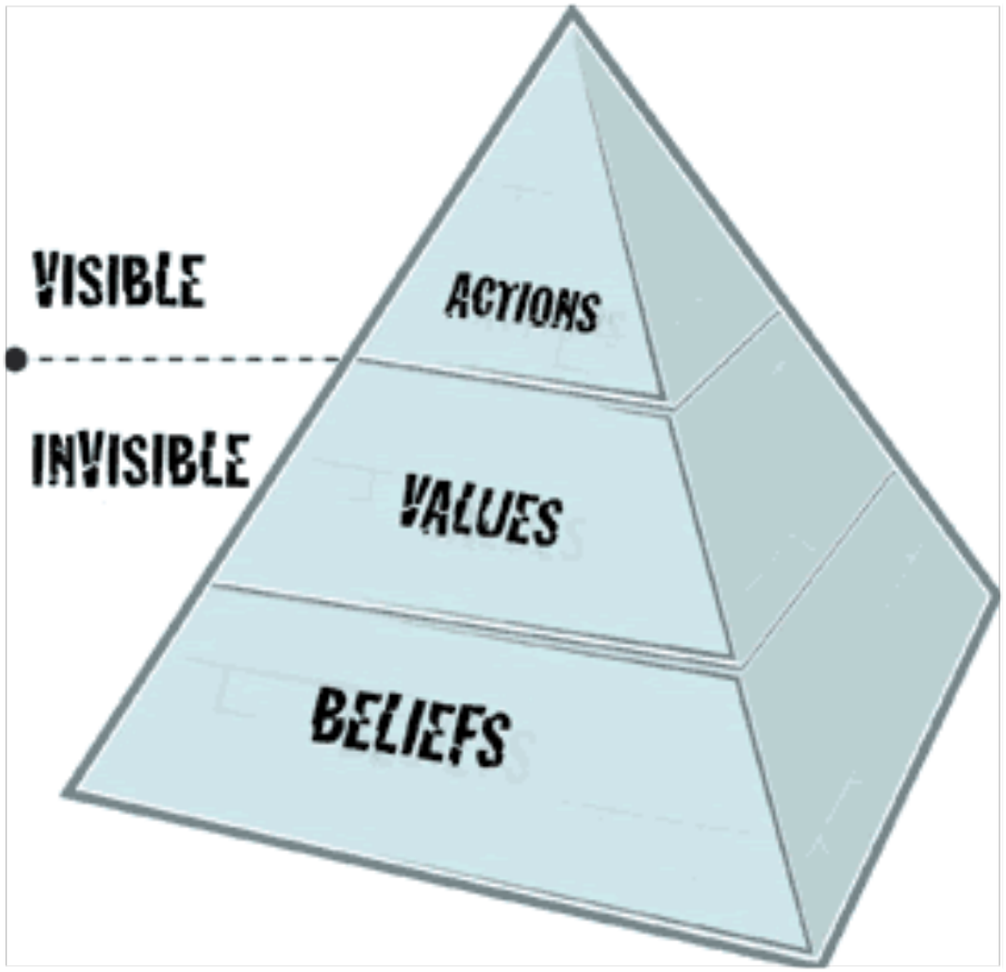

GROWTH
STUDENT LEARNING
ACHIEVEMENT
CLASSROOM INSTRUCTION
Enacted Curriculum
INQUIRY PROBLEM-BASED CONCEPTUAL
REFORM-BASED PRACTICES
TEACHER BELIEFS
TRADITIONAL-BASED PRACTICES
DIRECT INSTRUMENTALIST SKILL-ORIENTED
MINDSET
Standards for Mathematical Practice
© James W. Jones 2015
PA Core Standards for Mathematics
What Students Need To ...
KNOW, UNDERSTAND, and BE ABLE TO DO.

# Dissertation Title

A Quantitative Study: The Relationship Between School-Wide Instructional Practices, Teacher Beliefs, and Growth Mindset and Value-Added Student Growth, in Elementary Mathematics for Grades 3-5

# The Purpose…

**The purpose of my study was to determine the correlational relationship between teacher beliefs, practices, and growth mindset and the variable of value-added student growth.**




# Study Overview

36 School Districts, Representing 99 Unique Schools Met the Initial Parameters For the Study.

35 Statistically Significant Schools, Representing a Full Range of SES and Achievement Levels, Were Included. 113 Grade 3-5 Teachers Were Surveyed.

Teacher/School Level Responses were Statistically Correlated to PVAAS (AGI) Scores (Derived from PSSA Testing Results).

# Study Overview

INVESTIGATED THE CORRELATION BETWEEN INSTRUCTIONAL PRACTICES, TEACHER BELIEFS, AND TEACHER GROWTH-MINDSET ON ELEMENTARY STUDENT GROWTH IN MATHEMATICS.

Student Growth (Learning) was considered as the average growth index (AGI), a value-added metric derived from the Pennsylvania System of School Assessment (PSSA).

The study exclusively focused on Pennsylvania elementary schools responsible for teaching mathematics in grades 3, 4, and 5 only

# Conclusions!

To varying degrees…
**instructional practices,**
**teacher beliefs,**
and **teacher mindset**
were, *either interdependently, or independently*, **positively correlative and predictive of Average Growth Index (AGI).**

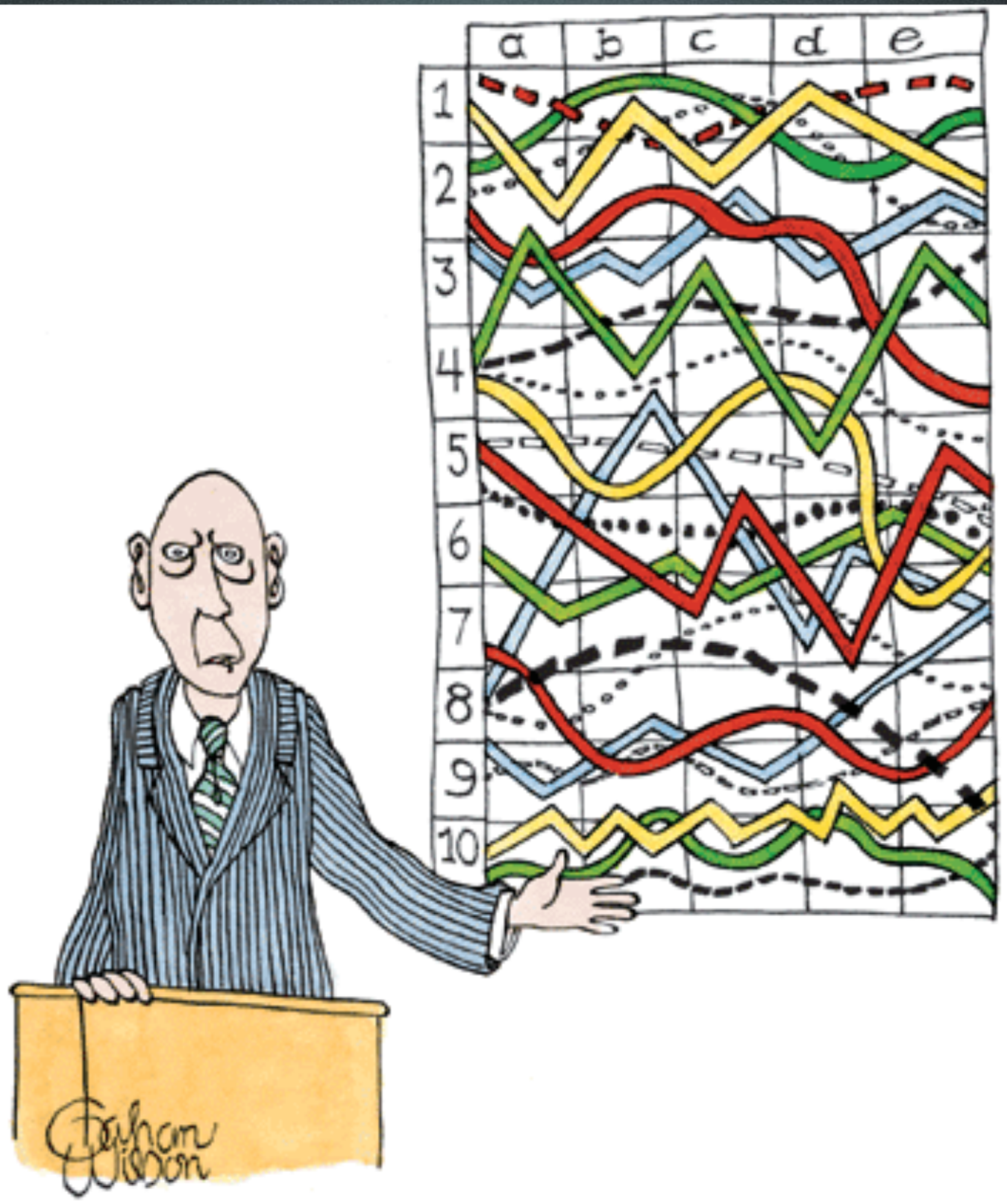
# Conclusions!

**Teacher's beliefs and mindset impacted learning more so than self-reported/ enacted instructional practices!**

Supports & extends existing research showing that students who hold a *Growth Mindset* are also more likely to grow academically, regardless of teacher or other influences.

# Conclusions!

The results indicate that teachers' beliefs and mindsets were transmitted, more so, to students independently, or irrespective, of the instructional practices considered for this study…



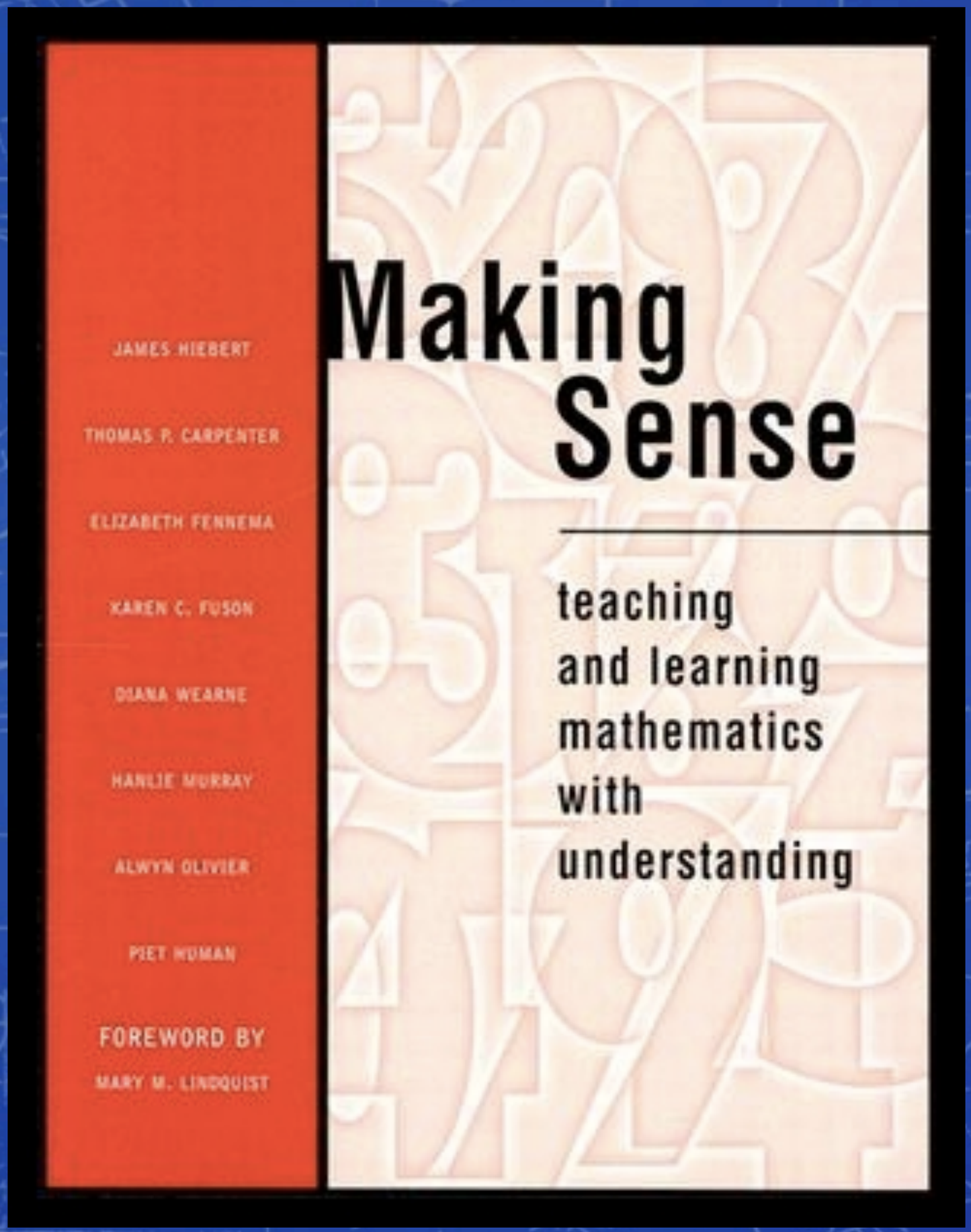

*"I'll pause for a moment so you can let this information sink in."*

# RtII & MTSS Effectiveness Blueprint

# Core Math Curriculum = Tier 1

First and foremost, the effectiveness of MTSS/RtII protocols is predicted on a solid **Tier 1**.

Curriculum, Instruction, and Assessment must be focused and inextricably linked.


JAMES HIEBERT
THOMAS P. CARPENTER
ELIZABETH FENNEMA
KAREN C. FUSON
DIANA WEARNE
HANLIE MURRAY
ALWYN OLIVIER
PIET HUMAN
FOREWORD BY
MARY M. LINDQUIST
Making Sense
teaching and learning mathematics with understanding

# *Hiebert, et. al...*
# *Five Dimensions of Learning with Understanding:*

1. The Nature of Classroom Tasks
2. The Role of the Teacher
3. The Social Culture of the Classroom
4. Mathematical Tools as Learning Supports
5. Equity and Accessibility

# Core Math Curriculum

# EUREKA MATH™

FROM THE NON-PROFIT GREAT MINDS™

## “Tier 1”

# Qualification Process for Math Support

## RtII (MTSS) Tiers 1 - 2 - 3

Depending upon grade level, a balance of …

- Universal Screening —
  Beginning of the year STAR Benchmarks
- Previous Year PSSA, Benchmarks, etc.
- **RtII Process** (teacher observations and input, classroom performance, common assessment results, progress monitoring data, team meetings etc…)

# Tier 2 Math Support

## Provides students with…

Individualized instruction based on his or her needs…

Small group, one-on-one, and adaptive, computer-based.

Prerequisite understandings, knowledge, and skills required for grade level success.

# Tier 2 Program Objectives

Provide each student the underlying concepts, skills, and procedures, for success in meeting, and to demonstrate an understanding of, the content and practice standards for mathematics.

Increase motivation to learn math by meeting each students at his current demonstrated level of understanding to ensure success.

Encourage mathematical communication; both written and spoken.

# How to Create A Positive Learning Environment?

Avoid a deficit model … expectations must remain high, including a focus on conceptual understanding.

Accept, accommodate, and affirm what students bring to the classroom, including addressing student affect.

Build on success to encourage and motivate students' to maximize their ability to develop mathematics proficiency.

# What is The Goal?

Student Understanding & Confidence

With understanding, comes confidence — and, a renewed willingness to engage with the mathematics.

Changing attitudes and helping kids to feel good about themselves as learners is NOT secondary.

# What is the Purpose of Tier 2 or Math Support/Intervention?

Identifying Level of Student Understanding (or Misunderstandings), Increasing and building Confidence, Digging to determine what students Know and Are able to Do, with a focus on What they do Understand, in order to...

**BUILD FROM THEIR STRENGTHS!**

# Embrace & Leverage Adaptive Technology & Blended-Learning Approaches…

## Grades K-2

dreambox® LEARNING

## Grades 3 - 5

Think Through Math Is Now Imagine Math

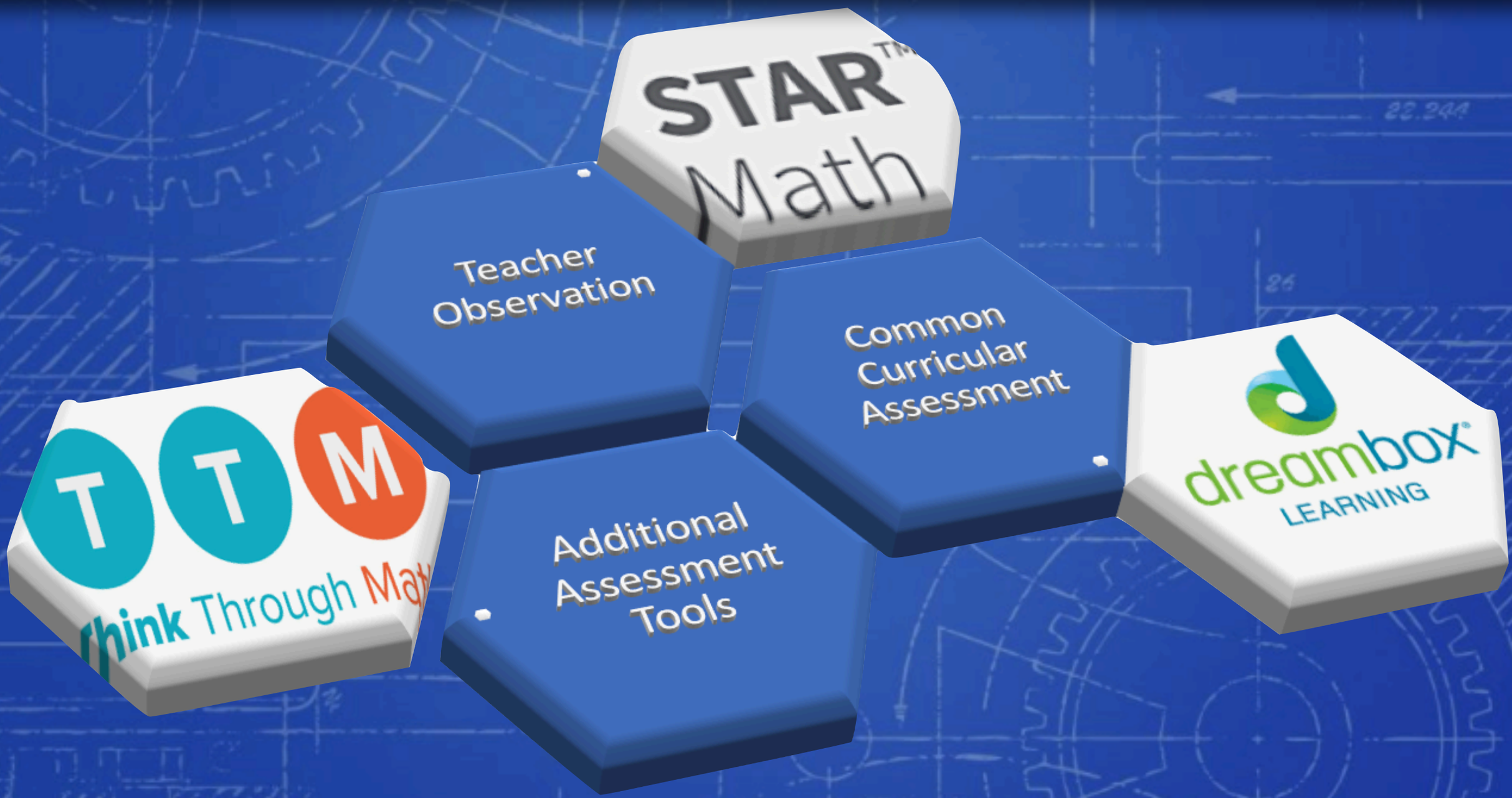
An approach that balances a data-informed approach, with an emphasis on developing student understanding.

The key is to always dig deeper and to consider the whole-child.

… MUST be more than lip-service …

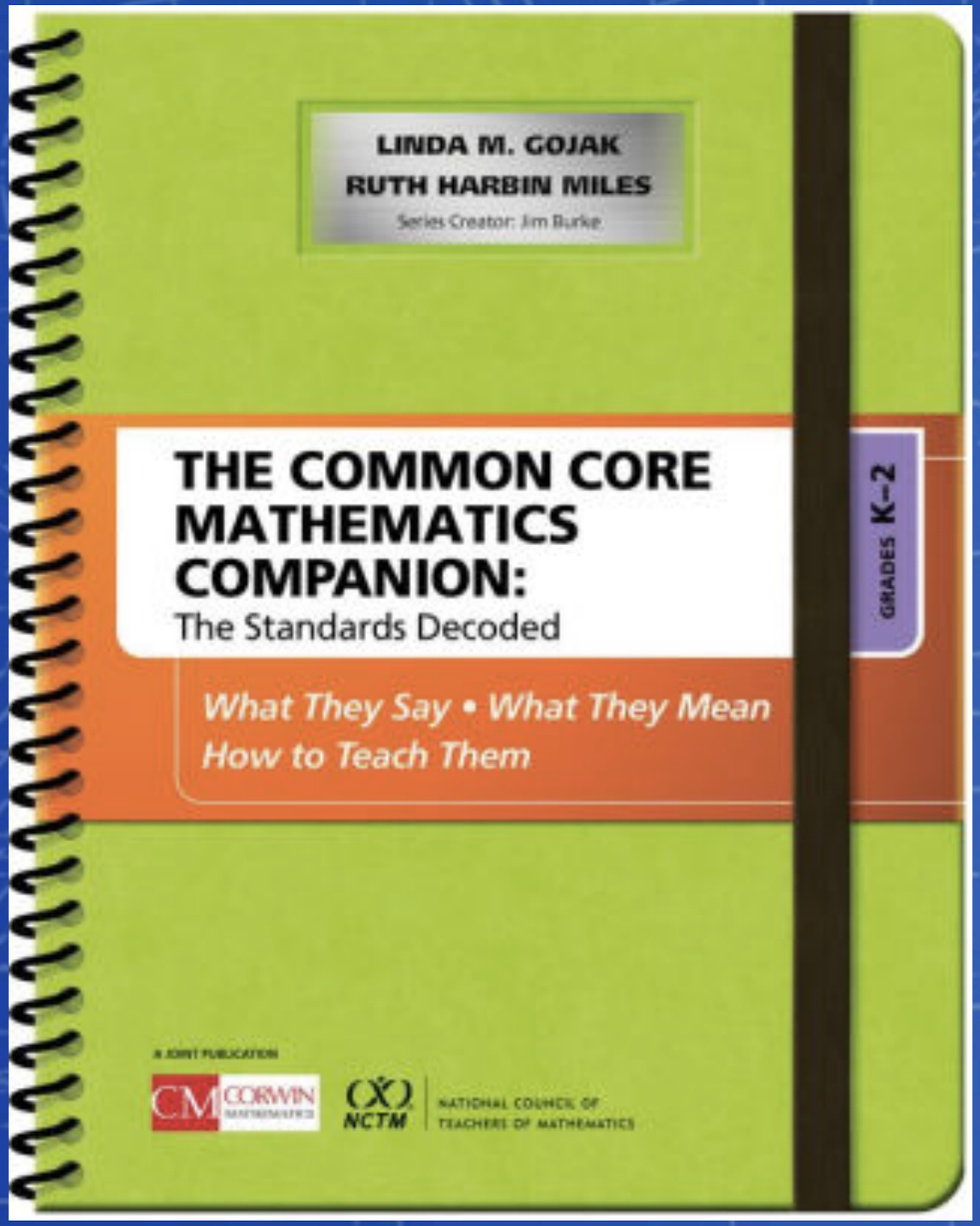
Students cannot be viewed as only numbers on a data sheet!

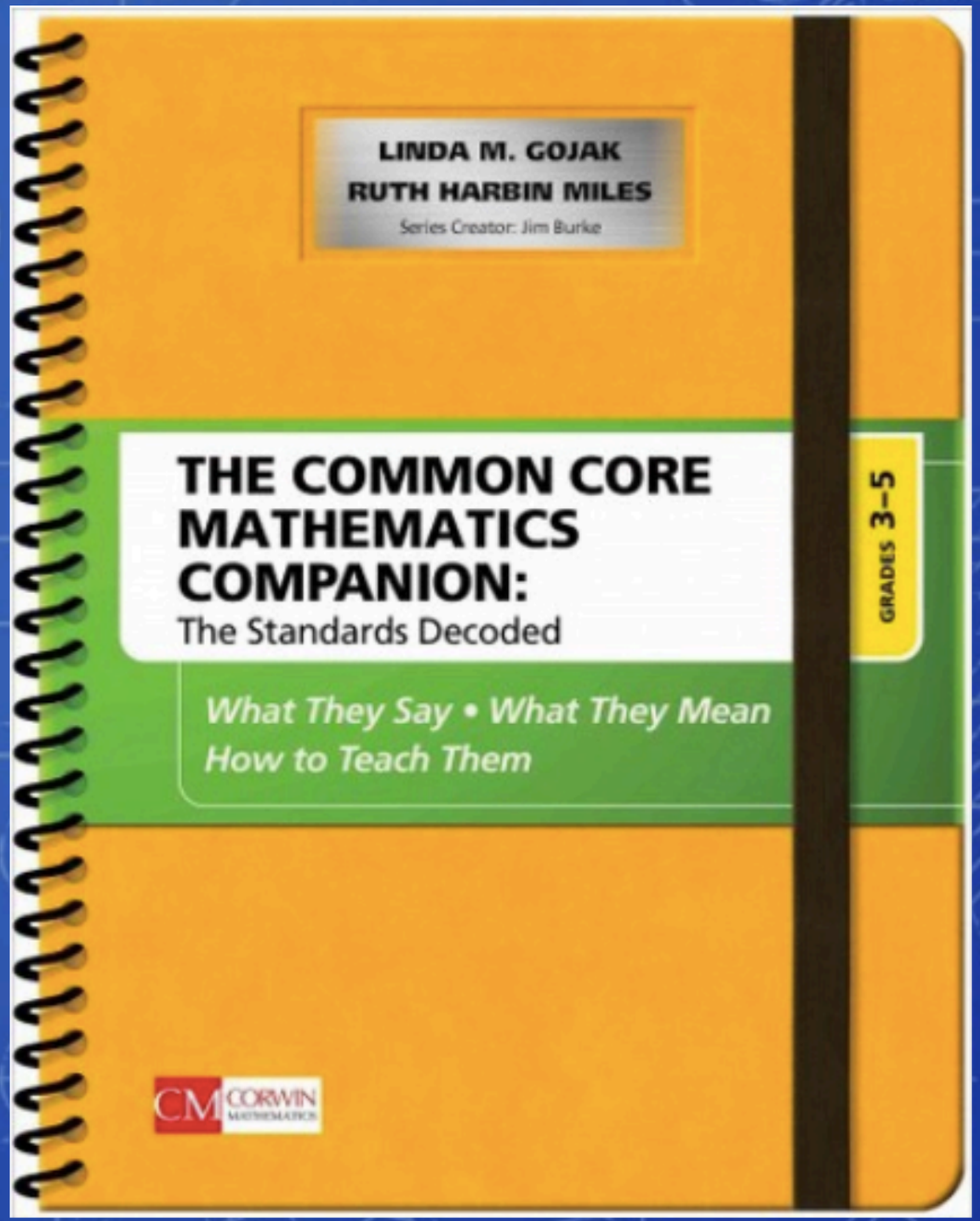
# Multiple Measures of Student Growth, Achievement & Understanding



# School-Wide Universal Screening & Progress Monitoring

- Weekly communication with Tier 1 (Classroom) Teachers
- Monthly RtII Meetings
- Benchmark Assessment Results
- Common Curricular Assessments


LINDA M. GOJAK
RUTH HARBIN MILES
Series Creator: Jim Burke
THE COMMON CORE MATHEMATICS COMPANION:
The Standards Decoded
What They Say • What They Mean
How to Teach Them
GRADES K–2
A JOINT PUBLICATION
CORWIN MATHEMATICS
NCTM
NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS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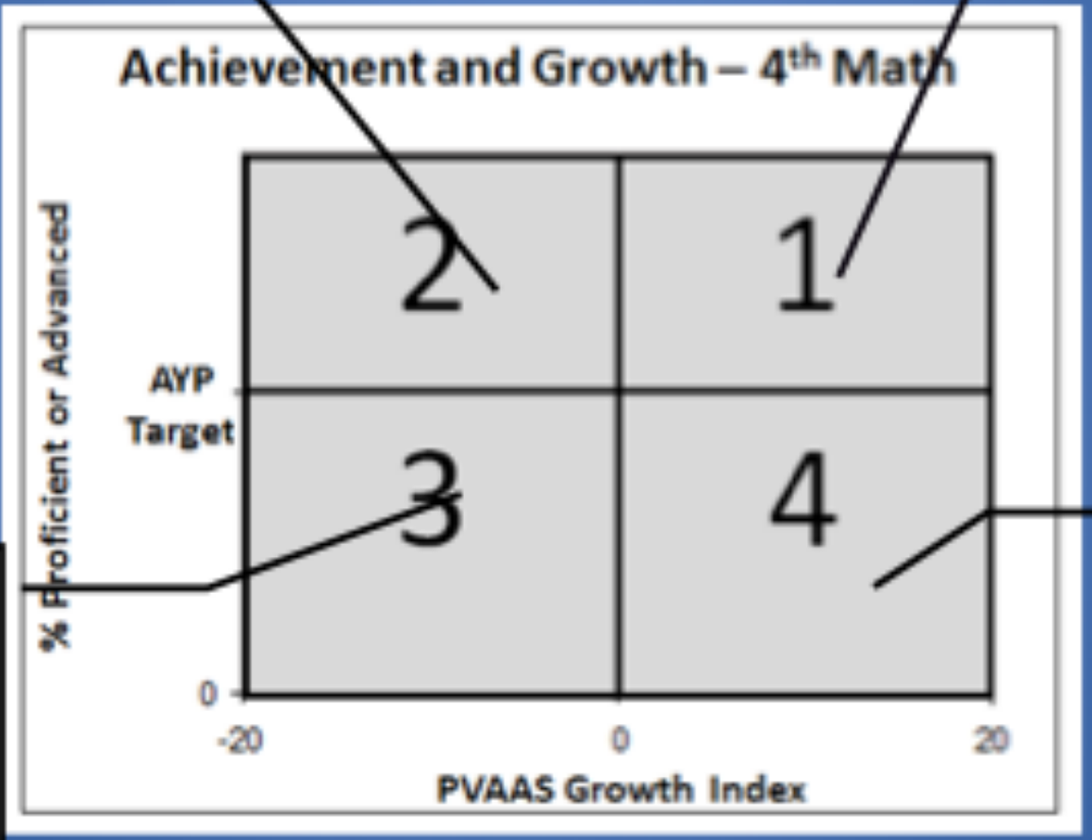
How to Teach Them
GRADES 3–5
CORWIN MATHEMATICS

# RtII Covers All Students!

**Quad 2 - Slipping**
Higher Achievement, Lower Growth

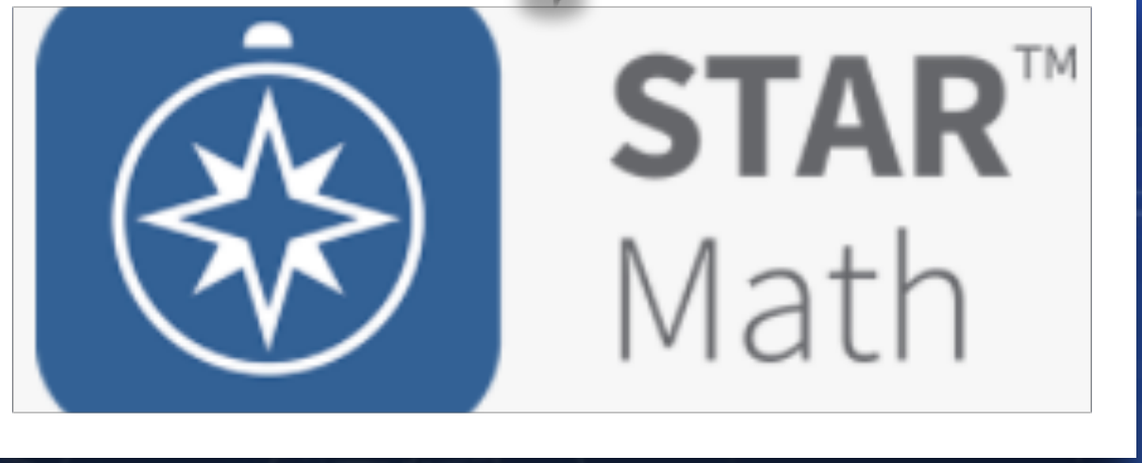



**Quad 1 - Excelling**
Higher Achievement, Higher Growth

**Quad 3 - Underperforming**
Lower Achievement, Lower Growth

**Quad 4 - Improving**
Lower Achievement, Higher Growth

# Embrace & Leverage Web-Based Benchmarking Technology…

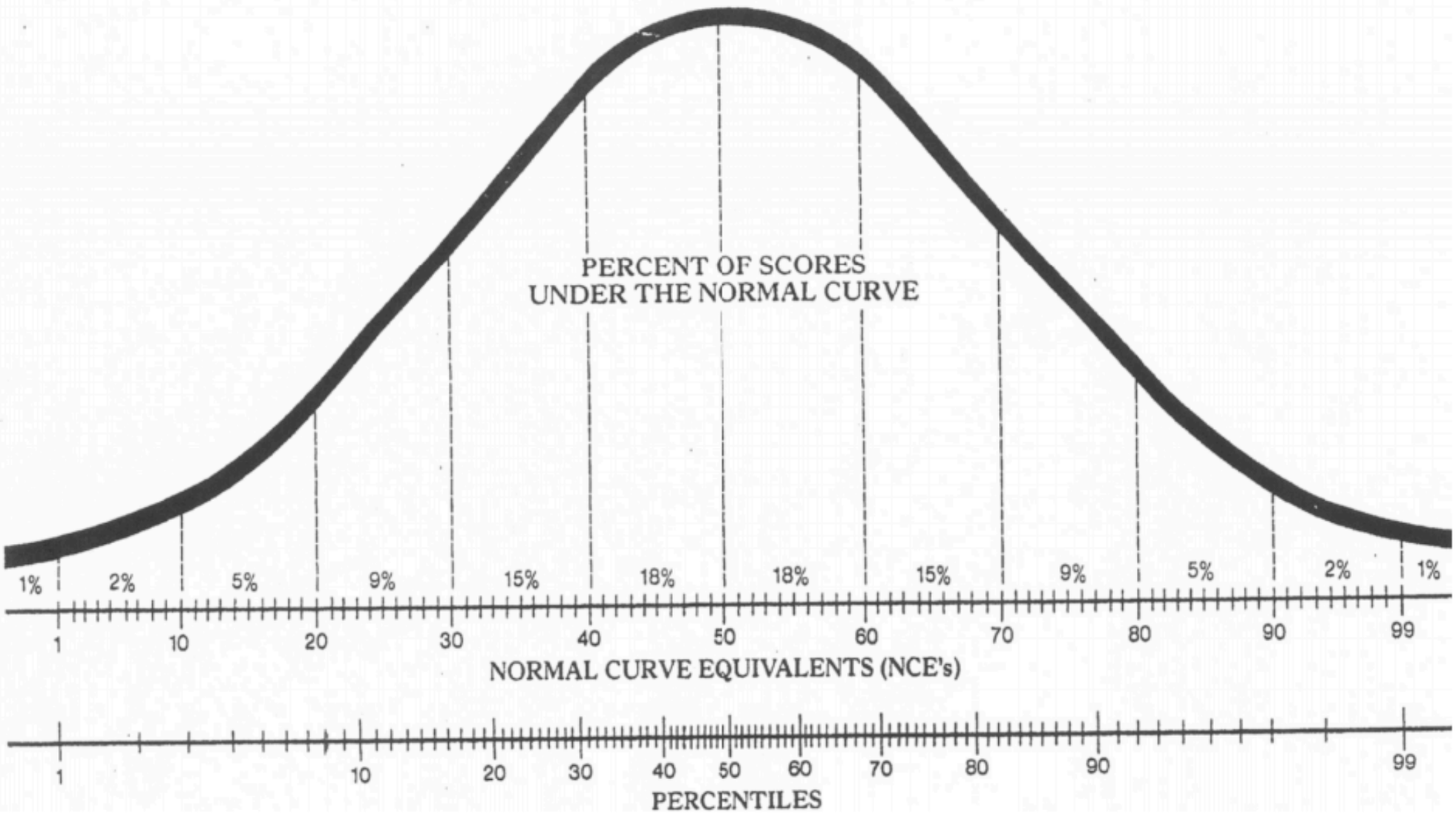



# NCE's -

# Normal Curve Equivalent

# Red Flags - dig deeper.

# NCE's
# Normal Curve Equivalent



# NCE's
# Normal Curve Equivalent

The Normal Curve Equivalent, or NCE, is a way of measuring where a student falls along the normal curve.

The numbers on the NCE line run from 0 to 100, similar to percentile ranks, which indicate an individual student's rank, or how many students out of a hundred had a lower score.

# Formative Assessments Are Paramount

We need to know where students are relative to grade level expectations, as explicitly as possible.

Multiple measures of student performance, including teacher observations within the grade-level group, and Tiered groupings, are critical.

# Formative Assessments (and, a Team Approach) Are Paramount

Flexible use of existing data and teacher-informed observations and **TEAM** analyses are necessary to truly determine the degree to which our students know, understand, and are able to do, relative to concepts, skills, and problem-solving, with our standards-based learning outcomes.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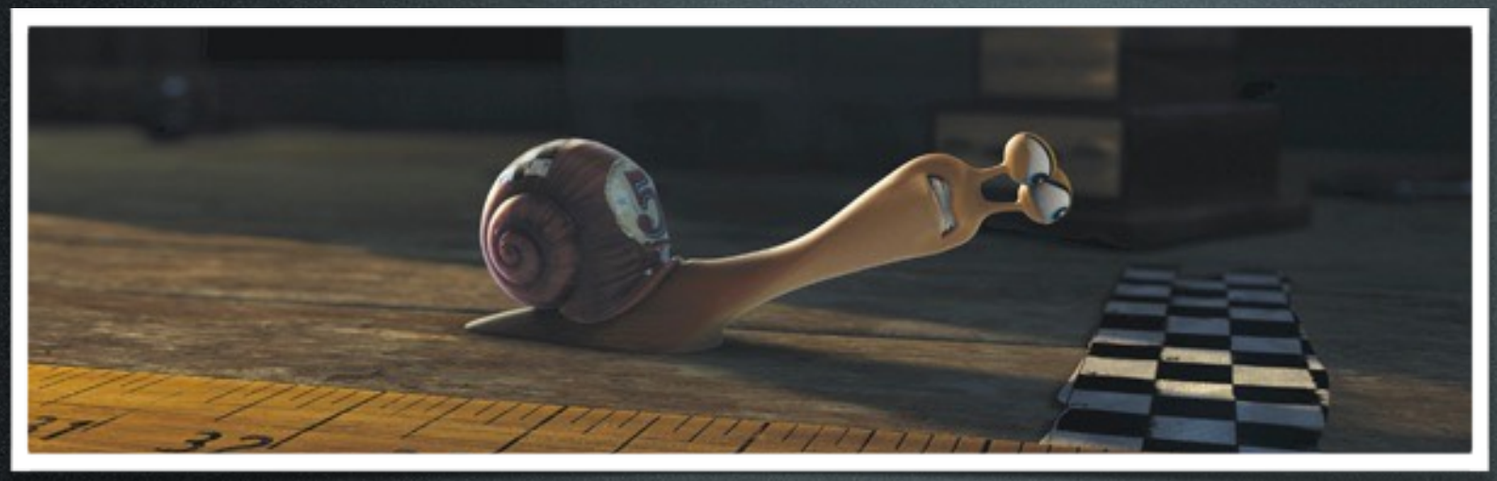
GROWTH



# Q & A

# RESOURCES

## Twitter

@james_w_jones

## Email

james_jones@fcasd.edu

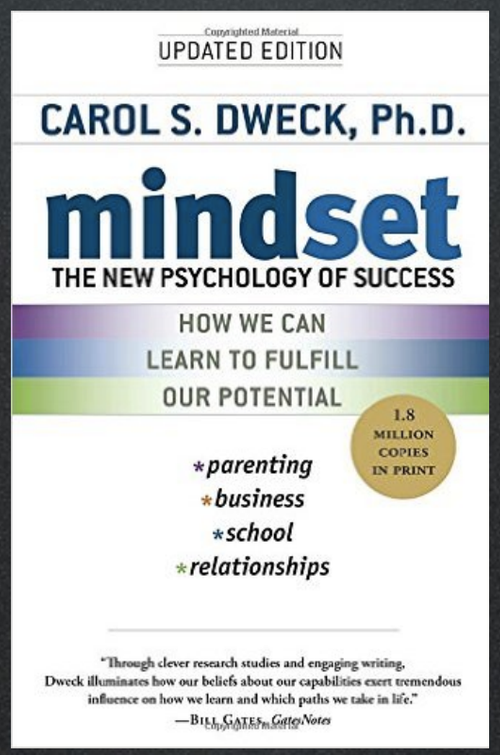
## Dissertation PDF…

https://t.co/xpGDYE3ld7

# RESOURCES


https://mindsetonline.com/abouttheauthor/

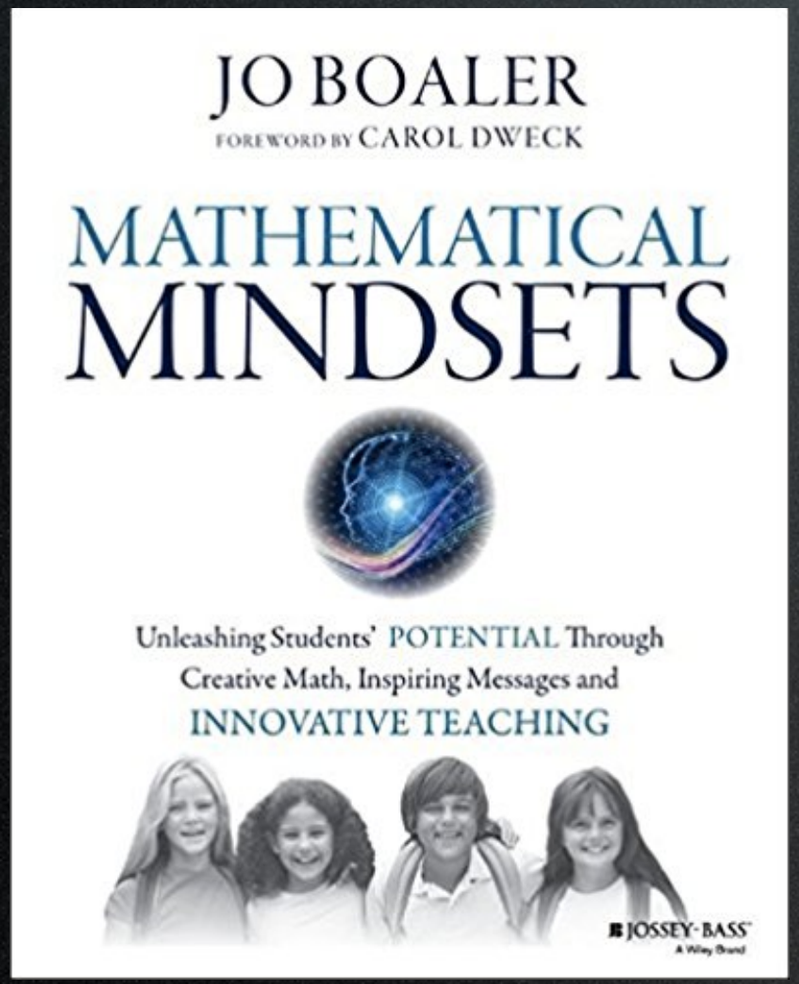
https://www.ted.com/speakers/carol_dweck

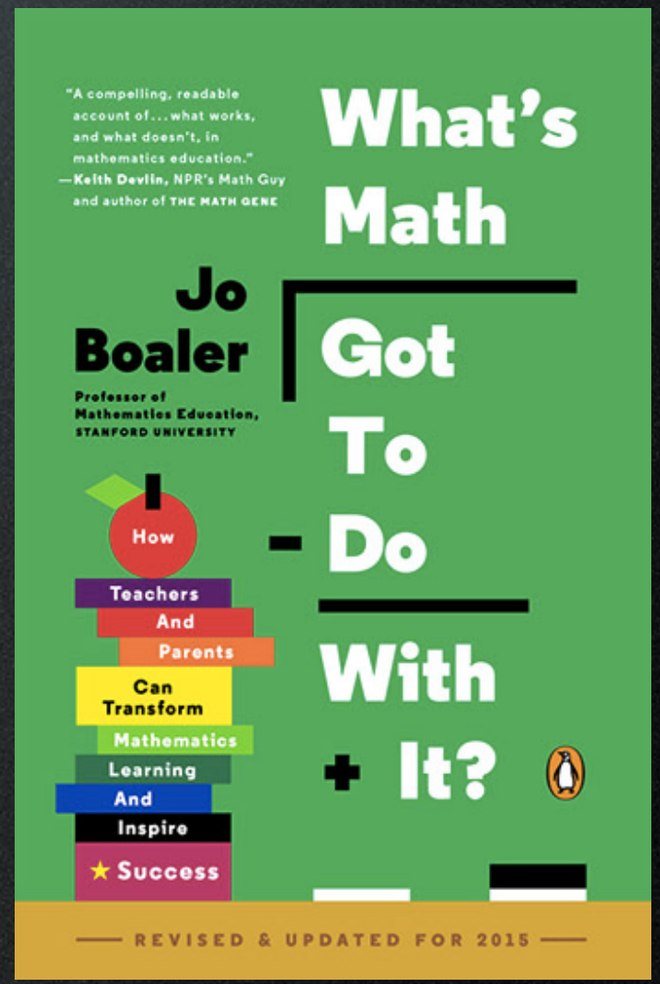


# RESOURCES

HTTPS://WWW.YOUCUBED.ORG/RESOURCE/GROWTH-MINDSET/

HTTPS://WWW.YOUCUBED.ORG/RESOURCE/BOOKS/



# Future Reading...

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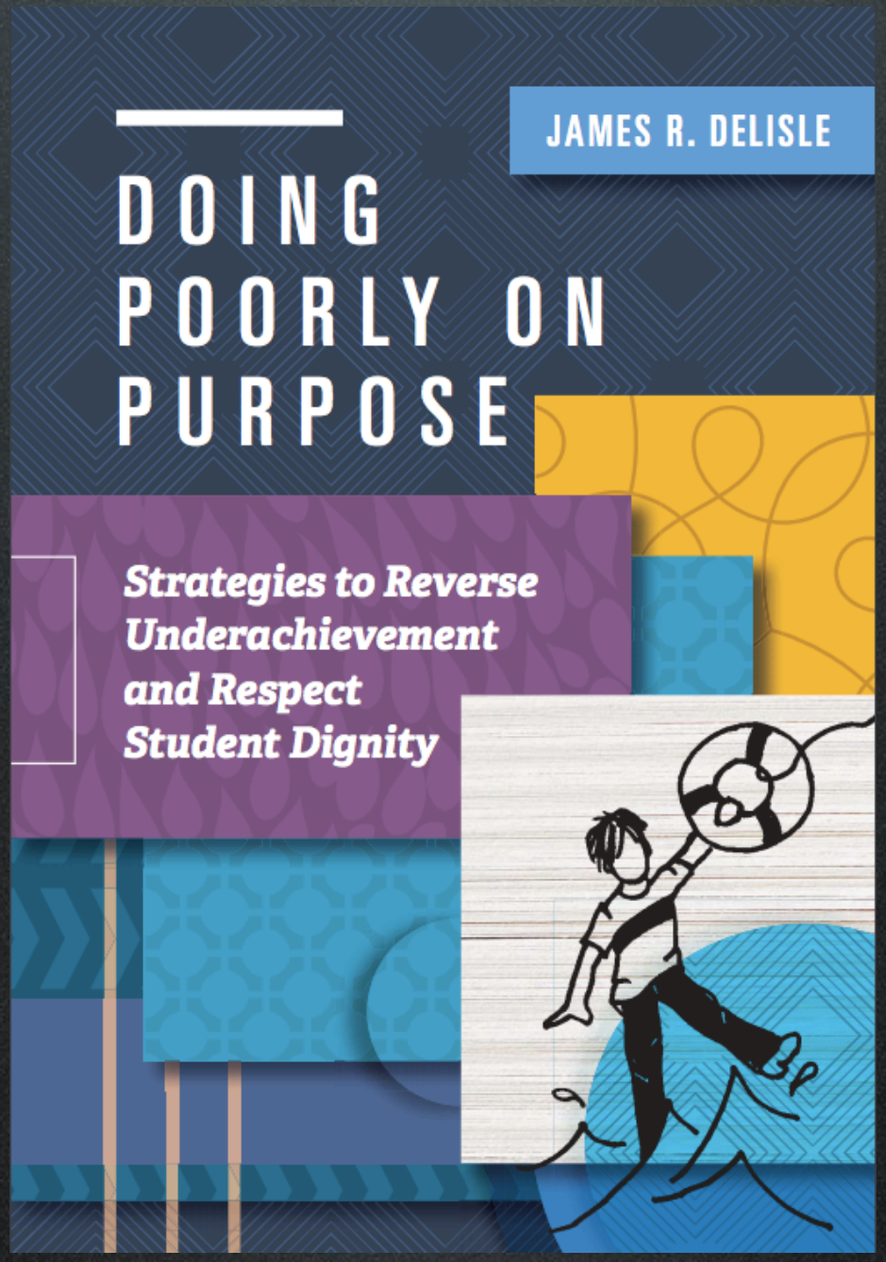

April 28, 2018

NCTM Annual Meeting, Washington, D.C.