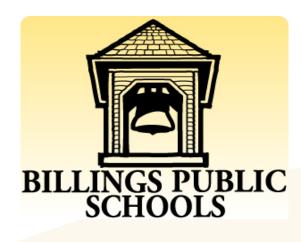
The Power of Standards, Scales, & Assessments



January 15, 2018

Dr. Mike Ruyle ruyle34@gmail.com

ACCIDENTALLY PUNCHED MYSELF IN THE FACE WHILE TRYING TO PULL MY BLANKET UP, AND IF THAT DOESN'T ACCURATELY DESCRIBE MY LIFE I DON'T KNOW WHAT DOES.





Please respond to this question:

If you were about to eat your last meal, what would it be??



FEEDBACK

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Providing and Communicating Clear Learning Goals

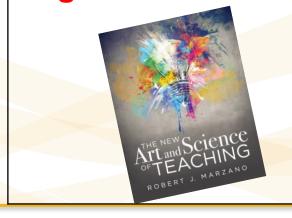
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Session Goals

Review the What, Why, and How of Priority Standards/Learning Goals

Review use of learning goals and the connection to instruction

Page 3

Review use of proficiency scales and the connection to instruction

Discuss common formative assessment

1	assessment
2	formative score
3	measurement error
4	obtrusive
5	proficiency scale
6	reliability
7	student-generated
	assessment
8	summative score
9	unobtrusive assessment
10	validity

Culture Shift...

What do you do?? What is your job?

• I help kids learn...

• Subtle but CRITICAL distinction!

Teaching is no longer "I taught it," but rather
 "They've got it!"

The Why...

This is challenging and exciting work.

• But is the one thing that is so transformational.

• End of today: How do we make these changes in our building, our departments, and in our classrooms.



Session Outcomes...

Review use of learning goals and the connection to instruction

 Review use of proficiency scales and the connection to instruction

Discuss formative assessment and the connection to instruction

SBE Components...





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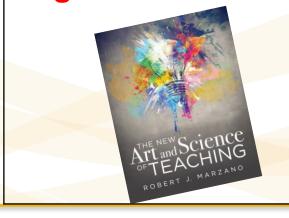
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The first step to higher levels of student achievement...

Be clear about what ALL students must know and be able to do.



The "What"?

- When it's not possible to teach all that the standards designate in the time available, some standards need to be emphasized over others.
- Prioritized Standards are those that have been identified as the most essential to a particular grade level, content area, or course.



Unidimensionality

When something refers to one dimension of knowledge or skill.



Unidimensionality

Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted Represent these problem equations with a letter standing for the unknown vulntity. Assess the reasonal teness of answers using mental computation and estimation strategies including rounding.

Solve multistep word problems posed with whole numbers and having whole-number answers using addition.

Solve in ultistic p word problems posed with who e numbers and having the hole-number answers using subtraction.

Solve multistep word problems posed with whole numbers and having whole-number answers using multiplication.

Solve multistep word problems posed with whole numbers and having whole-number answers using division, including problems in which remainders must be interpreted.





Covariance

As ability in one dimension increases, so does that in another dimension.



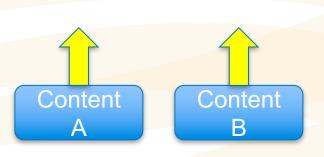


ELA Example of Covarying Elements (grade 8)

Analyzing Text Organization and Structure

- Identify relationships among content in a text.
- Describe the role of specific paragraphs and sentences in the development of a text.







Non-example (K Writing)



Production and Distribution of Writing

Revising writing

- With guidance and support from adults, respond to questions and suggestions from peers and add details to strengthen writing as needed.
- With guidance and support from adults, explore a variety of digital tools to produce and publish writing, including in conditions with peers.

Using digital tools

Elements in a measurement topic should be covariant.

Bottom Line on Learning Goals

- First thing I look to when I enter a room
 - Are learning goals correct?
- A statement about what a student will know or be able to do.
- Specific goals more of an impact than general goals
- Effect on learner powerful
 - Great activity means nothing if nothing to attach it to
- If done correctly all activities make sense



Session Outcomes...

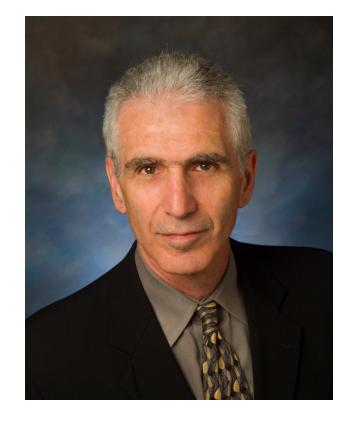
 Review use of learning goals and the connection to instruction

 Review use of proficiency scales and the connection to instruction

Discuss formative assessment and the connection to instruction

Critical Components...





The foundation for aligned curriculum, instruction, assessment and feedback is...

a high-quality proficiency scale.

FEEDBACK

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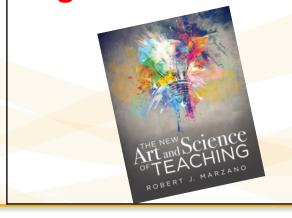
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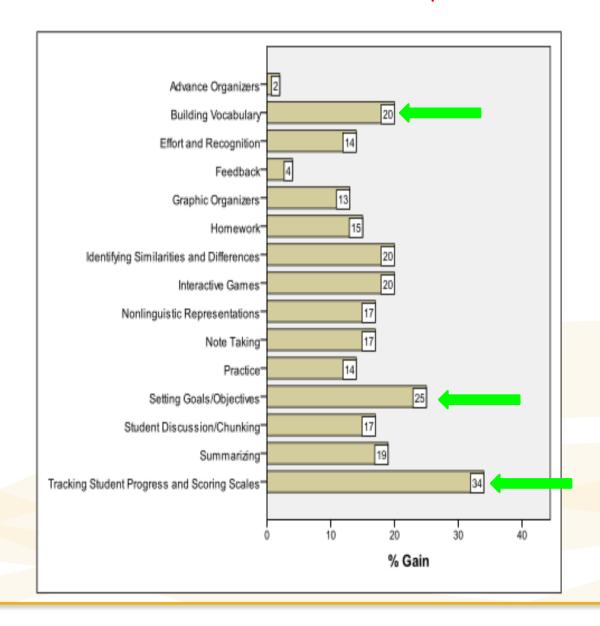
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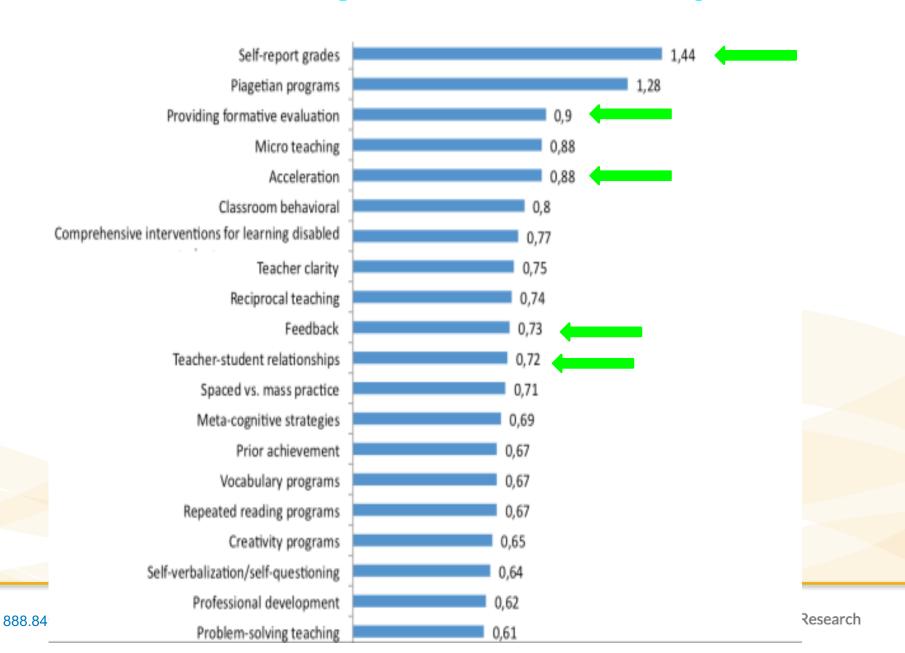
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Marzano Research Lab: Percentile Gain for Specific Instructional Strategies



John , *Visible Learning*, Effect Size on Student Learning



Proficiency Scales

Backbone of the system

- Ensures consistency
- Ensures grades reflect learning

Guides instruction and assessment

- Consistent protocol to show what proficiency looks like
- A guide to report the progression of student learning against a particular learning goal
- Brings the standard to life



Three Levels of Performance Related to Every Learning Goal:







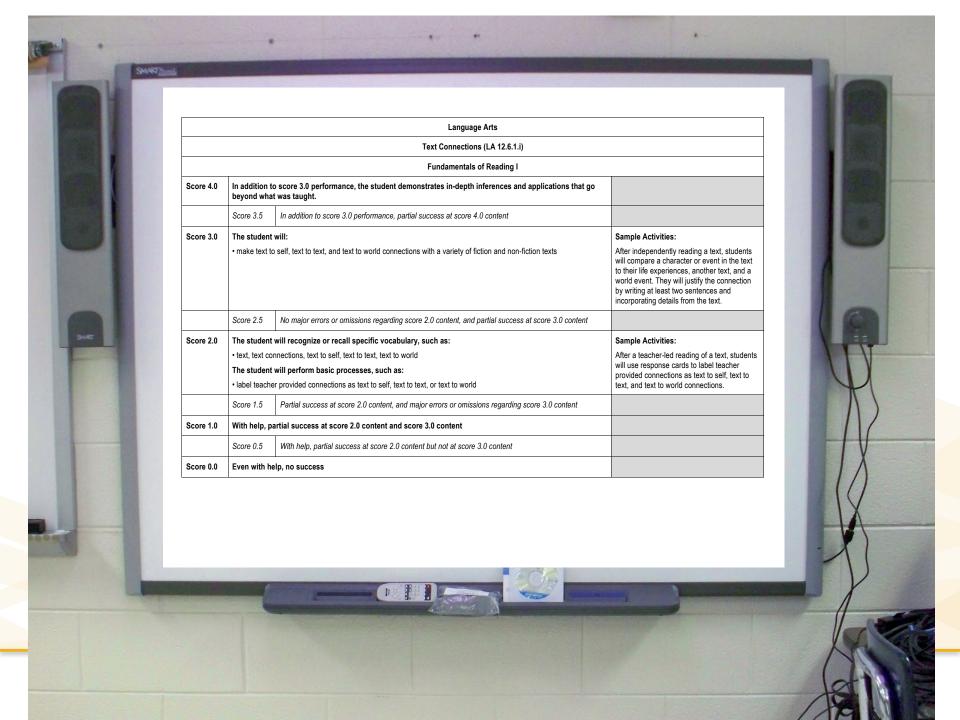
AT the learning goal

BELOW the learning goal



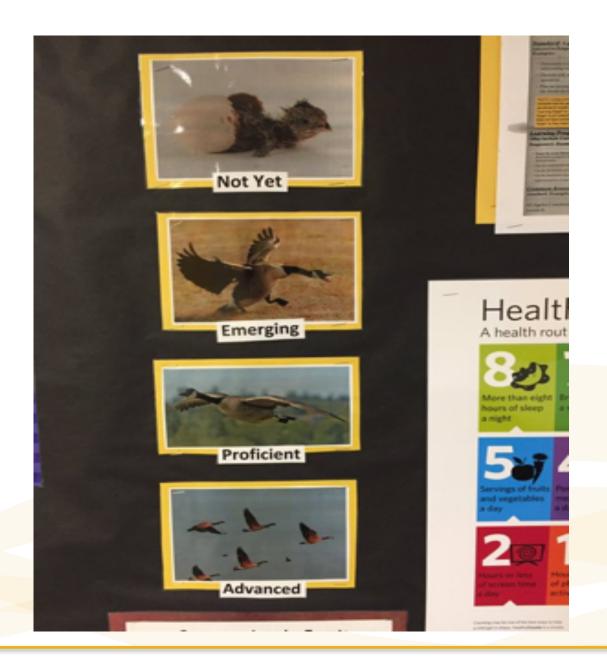
It is critical that we use scales frequently with our learners to ensure that *they* understand what they need to know and be able to do.

What evidence of scale use exists?



9: I can solve multiplication & division fact problems by using strategies that result from applying number properties carning . Goal In addition to a 3, I can make t: in-depth inferences that go beyond what was taught. 3: a strategy to help me solve multiplication & division fact problems. 2: Édivision problems by using number properties. with help, I may be able to solve: some multiplication and division problems by using number properties. O: Even with help, I do not understand the

MARZANO Research



ONDERSTANDING BIG BANG THEORY STYLE

4= SHELDON COOPER—I COULD TEACH THIS TO THE UNIVERSE!



3= LEONARD HOFSTADTER—SHELDON MAY BE THE PRODIGY, BUT I'M PRETTY DARN CLOSE!

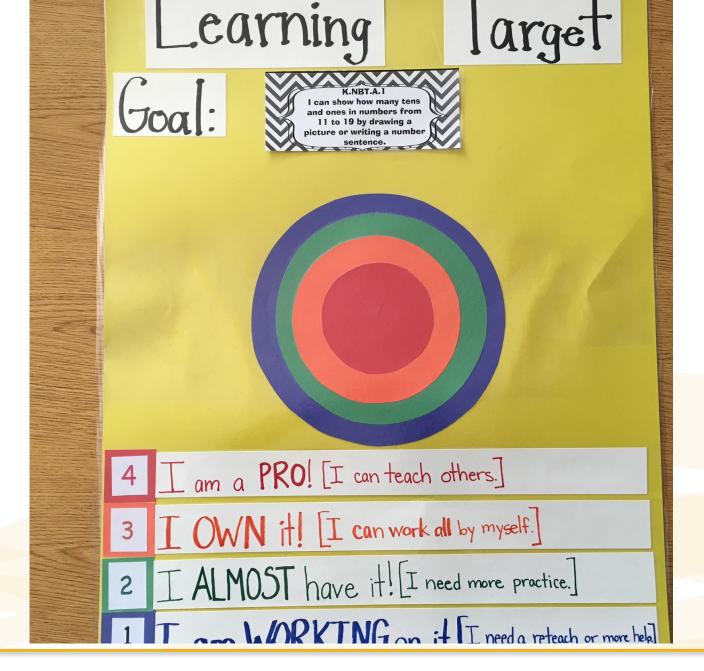


2=RAJ & HOWARD—SMART
BUT PRETTY CLUELESS WITH THIS!



PENNY—I'M STUCK IN THE ELEVATOR SHAFT!





Kid Friendly Language

• Proficiency scales need to be communicated to students.

Designed for a student audience.

From a Billings Teacher

My goal throughout the year is for students to be more aware of their progress in learning and to take ownership.

I'm using Seesaw to have weekly check-ins with my students on the objectives they need to work towards proficiency on.

More...

I ask questions about strategies that help them learn best and what they need to do to improve them proficiency score.

I use Marzano's scale 1-4 for students to evaluate themselves.

- 1- I'm not understanding.
- 2- I'm starting to understand, but need help.
- 3- I understand; I just make small mistakes.
- 4- I've got this! I can teach someone!



- I've been really impressed with their response to using the program;
- I've also gained so much about their perceptions of their learning and can tailor lessons with validity.
- I, also, just love and get excited about how much I can learn from my students in such a short time

Critical Piece

• Scales form the foundation of all education.

• Allows for and empowers teachers to differentiate.

- Targeted Instruction vs Tracking
 - This is a **BIG DEAL!**

Power of NASOT becomes clear now.

Standing Partners

• Where are you in terms of considering *Learning Goals* and *Proficiency Scales* in your classes?

What do you need to move forward?

Session Outcomes...

 Review use of learning goals and the connection to instruction

 Review use of proficiency scales and the connection to instruction

Discuss formative assessment

FEEDBACK

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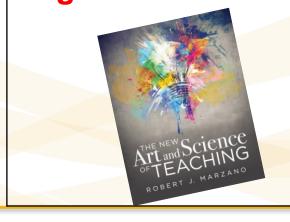
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Cognitive Routines

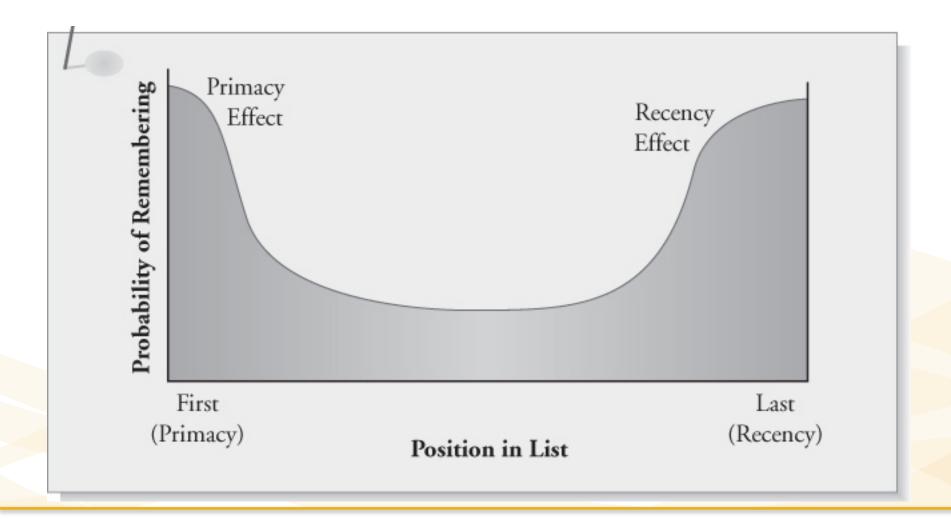
- Clear and well established routines –
 cognitive routines
- Transitions clear communication on when activity starts, how long, and when it ends
- Presenting New Content
 - Important to consistently monitor the pace
 - Present in small chunks then group to interact
 - Monitor attention if wanes, shorten chunks



Big Factor

- Primacy-Recency Effect
 - In learning session, remember best that which occurs first
 - 2nd best what came second
 - not much after down time
 - surge at the end
- Draw this graph





- We all know this!!!
 - feel it in church,
 - feel it in class
- When notice decline use cognitive routines
 - Change state of brain get new plateau back
- Becomes instant best friend routines!!!
- Capacity for working memory
 - How much can we handle?

Brain-Based Rule

• Brain-Based Rule:

Age = attention span 12 yr olds – probably subtract 2!

Attention span tops out at 18-20 min
 We do it here too – group, talk, move

Chunking

- •The brain needs time to create connections and pathways to move learning into long term memory.
- The hippocampus can only hold so much
- Too much, too fast, it won't last.



Approximate attention spans...

- For pre-adolescents:
- Change up instruction approximately every
 5-10 minutes.
- For adolescents into adults...
- Change up instruction approximately every 10-20 minutes.





Ask Learners to:

- Draw what they are learning
- Sing or rap about it or dance about it (if everyone feels safe and brave!)
- Explain it to someone
- Create a flow chart
- Create a simile, metaphor, or analogy
- Explain how it is similar or different kids use their own background (explains things about themselves)
- Explain how it makes sense
- List the main points



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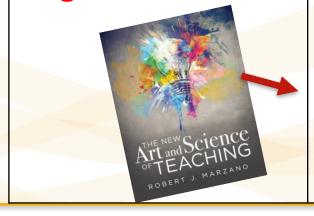
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Teacher Talk...

- Balance teacher talk to student talk in typical period....
- 3 Huge Studies K-12 80% - 90% Teacher Talk!
- Input literacy read and listen
- Output literacy speak and engage 50 min period teacher- 40 min students 10 min/
- 30 kids 20 seconds per period



Grouping Routines

Like Bacon



Add to anything and makes it better

Lecture – 5%

Add grouping – additional 50%

Organize Students

• Big issue is control – teachers often hesitant to cede control!

- Key to this element:
 - What do teachers do when students are discussing and interacting?
 - Assess and adjust eyes and ears
- Goes back to focus on learning as opposed to teaching



When/Why Should We Use Multiple Grouping Strategies?

- Keeps kids out of comfort zone
- Small group psychology
 - -Roles: hogs and logs all talk, no talk
 - Output and input literacy
 - Needs both in classroom so change groups
 - -Good for kids to be both

Some Grouping Strategies

- Think, Pair, Share, Square (extend sharing)
- Speed Discussions
 - Enhances student engagement and "creates learning that is active, collaborative, and fosters learning relationships (Zepke & Leach, 2013)
- Learning appointments (Clock Buddies)
- "go to 2nd appointment" make own form
- Find someone who...
- 4 corners
- Elbow Partners
- Any others?



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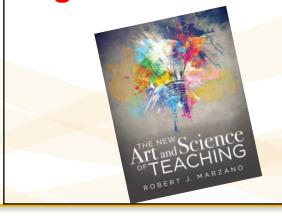
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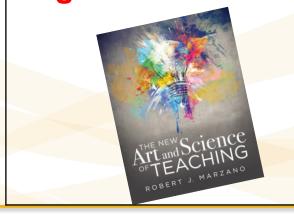
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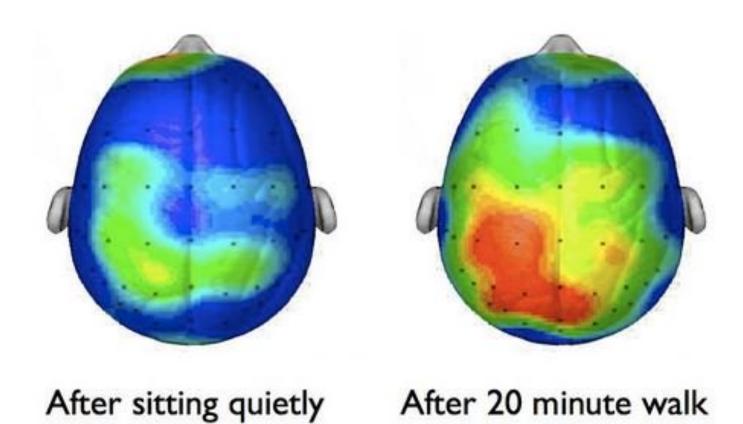
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Physical Movement

- Can have a big impact on energy, which affects ability to attend
- Any activity that employs movement, increases probability that students will feel better and engage – tons of research
- Stretch breaks

Composite of 20 student brains taking the same test



Research/Scan compliments of Dr. Chuck Hillman University of Illinois

John Ratey - Spark

"The real reason we feel so good when we get our blood pumping is that makes the brain function at it's best...This benefit of physical activity is far more importnat than what it does for the body."

"Amazingly, the part of the brain that processes movement is the same part of the brain that processes learning."

Eric Jensen, Teaching With the Brain in Mind, 2005



Session Outcomes...

 Review use of learning goals and the connection to instruction

 Review use of proficiency scales and the connection to instruction

Discuss formative assessment and the connection to instruction

Critical Components...



FEEDBACK

CONTENT

CONTEXT

<u>Providing and Communicating Clear Learning</u> <u>Goals</u>

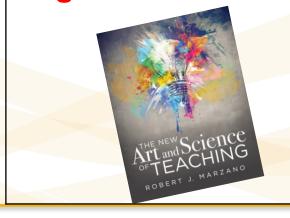
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When I say "Assessment"

• What is the first thing that comes to your mind?

What is the point of assessment?

James McMillan

"Classroom assessment (CA) is the most powerful type of measurement in education that influences student learning" (2013)

Critical Piece...

Assessment is not inherently about grading.

We can assign grades based on assessment data, but **the point** is to provide information related to student learning.

Then, teachers should respond to the assessment data by adapting their practice.



Pattern of Performance

• As kids respond to a number of assessments at some cognitive level, we will discern patterns

Item Response Theory

- ACT follows this theory
 - That why guessing doesn't hurt



Here's why it's important...

Butter Bean

- Use formative assessment to monitor progress on an identified learning target.
- Goal (Learning Target, Prioritized Standard, etc...) 300 lbs!
- Assessed every 2 weeks 20 formative scores



Butter Bean

205, 205, 215, 220, 215, 225, 235, 225, 240, 250, 260, 250, 260, 275, 300, 305, 300, 285, 300, 310

- Can he Bench 300 lbs??
- What's his average?? What's his grade?
- 254 LBS
- 84.6%



How assessment looks in the classroom...

• Anything a teacher does to gather information about a student's knowledge or skill.

- 3 types of assessment.
- Each can and should be used in a system of formative assessment.

Obtrusive Assessment...

- Interrupts normal flow of instruction
- Instruction stops!
- Stop to "take the assessment"
 - Paper/pencil test
 - Quiz
 - Performance
 - Demonstration



Unobtrusive Assessment...

- Instruction does not stop!
- Students may not even know.
- Most easily applied to procedural knowledge (skill).
- Coaches
- Observations
- Still provides information current status



Student Generated Assessment...

- Most underutilized form.
- Students generate manner in which they will demonstrate their status.
- Usually use obtrusive types.

Separate de la constitución de l	Sec.		5 **		
Excellent	Good	Ok	Poor		
	+	+	+		
It has a cast shadow. It has gradation on the bottom. It has a light source. It goes from light to dark very clearly. Light colors blend in with dark The way the artist colored the car showed where the light source was coming from.	It has shine marks. Artist shows good use of dark and light values The picture shows gradual shades in the car. He used light values that helped the car the way he used the shadows.	> There is gradation on the bottom of the door.	> The rims are shaded darkly. > The car looks 3-D.		
	-	-	-		
It has an outline. Cast shadow is too dark Doesn't go from light to dark Doesn't have enough gradation Outlined some body parts Cast shadow is really straight	Needs more gradual value Give wheels lighter gradation or darker shade The direction of the light is not perfectly directed. The artists basically outlined the car. He had more dark value than light values.	The car is outlined. There is no shadow. It's not shaded from light to dark. There are no details. The windows have no shine marks. The wheels do not look 3-D.	The wheels are too little. The wheels are not well shaded The shadow is not shaded correctly.		

Atmospheric Processes and Water Cycle

- Infer relationships regarding atmospheric processes and the water cycle
- An explanation of:
 - How the water cycle processes impact climate changes
 - •The effects of temperature and pressure in different layers of Earth's atmosphere
- •Recognize and recall basic terms such as: climatic patterns, atmospheric layers, stratosphere, troposphere.
 - •Recognize or recall isolated details such as:
 - Precipitation is one of the processes of the water cycle.
 - The troposphere is one of the lowest portions of the Earth's atmosphere.

Level 3.0 Items Measuring Atmospheric Processes and Water Cycle

- **Explain** how evaporation affects the climatic pattern in areas around large bodies of water, such as the shoreline communities of Lake Michigan?
- A weather balloon travels up into the stratosphere. Explain what would happen to it as it progressed through the various layers of the atmosphere?

Used Constructed Response in this case!



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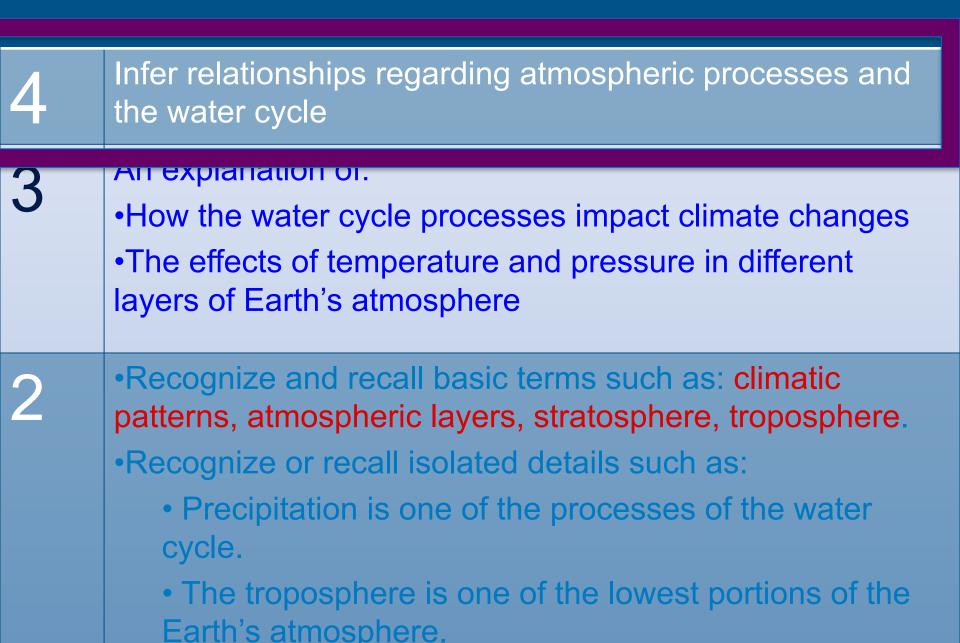
Level 2.0 Items

Measuring Atmospheric Processes and Water Cycle

- Define the following terms.
 - Climatic pattern
 - Atmospheric layers
 - Stratosphere
- Identify the true statements with the letter T.

The atmosphere is between the troposphere and the
stratosphere.
The Earth's atmosphere helps protect life on Earth by
absorbing ultraviolet radiation.
The temperature of the Earth's atmosphere varies with
altitudo

Atmospheric Processes and Water Cycle



Level 4.0 Items Measuring Atmospheric Processes and Water Cycle

Why is this analogy accurate?			
Condensation is to evaporation as	is to	•	
Complete the following analogy.			

What if you already have assessments for your unit of study?

- Don't throw anything out!
- Back-map the existing assessment to your proficiency scales to ascertain alignment and item levels.

Process for Backmapping an Existing Assessment

- 1. Teachers identify the proficiency scale or scales that need to be measured by the existing assessment.
- 1. Teachers examine each assessment item to determine the level of the proficiency scale that it corresponds with and label it appropriately.
- 2. Teachers identify assessment items that do not correspond to any levels of the proficiency scale and remove them.
- 3. Teachers add items for levels of the proficiency scale not represented by items already on the assessment.

Sample 5th-Grade Numeration Assessment

M.5.1: Students will solve addition and subtraction problems using whole numbers that apply to real-world situations.

	Complete the definition:
	1. A sum is
L 2	2. A difference is
	Write the word form of each number.
L2	3. 5,673,210
L2	Write the standard form for each.
	4. 7,000,000 + 40,000 + 3,000 + 20 + 7
L 3	5. 6,342,984 6,432,984
	Order the set of numbers from least to greatest.
	6. 5,342,752 5,384,982,762 5,825,701 5,827,902,872
L3	
	Estimating
	7. Round 342,287,976 to the nearest million
L3	
	8. Estimate the sum of 355,291 + 628,902 by rounding each number to the nearest hundred
	thousand.
	O America the graph of another the leavest and the graph of the graph of the second of
	9. Arrange the number cards to create the largest possible number. Use each card one time.

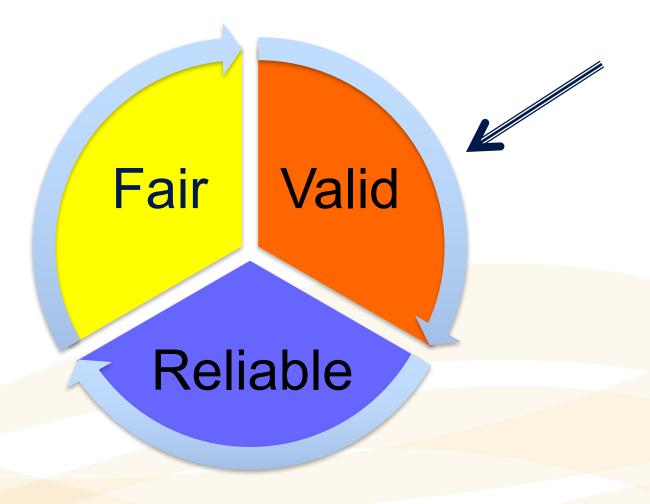


L 4

A word about validity and reliability...



Quality Assessment



Definition of Validity...



Definition of Validity...

Truthfulness: Does the test measure what it purports to measure?

Let's look at an example...



DNA Molecule Project Scoring Guide						
25 points	DNA molecule elements present (the model is an accurate representation)					
10 points	Accurate and appropriate labeling of DNA parts					
40 points	Innovation and creativity					
75 points	TOTAL points possible					

^{*10} bonus points = project submitted one week prior to due date

^{** 5} bonus points = project submitted at least one day prior to due date

Nonfiction Reading Expectation

In reading this six weeks you have a minimum requirement of reading two nonfiction books. One of the books must be a biography or an autobiography. The second book must be a nonfiction about any subject of interest to you such as tigers, astronomy, World War I, medicine, or computers. After you read these two books, you must select one of them for the class expectation.

For the expectation, you must either dress up as the character in your biography/autobiography or as a character presenting information about the subject in your nonfiction. I will schedule presentations the last week of the six weeks. You will need to come prepared on your scheduled day ready for me to video tape you in front of the class as you present. I will be grading you on the following criteria:

- (10 pts)
 1. thorough introduction to person or subject and an appropriate conclusion
- (10 pts) 2. costume
 - •well thought out and thorough
 - original/creative
 - ·must include at least one prop
- (10 pts) 3. 10 important facts or events about the subject or person
- (10 pts) 4. stage presence
 - standing tall and holding still
 - ·looking at the audience
 - speaking loudly and clearly
 - ·using an interesting voice
 - ·having a rehearsed presentation
- (10 pts) 5. memorized 2-4 minutes presentation

Total Points = 50 points

To help ensure validity...

- Use standards and scales
- Collaborate does it meet criteria?
 - Ask for review help
- Analyze data after assessment is complete

Edwards will use performance to each of these goals to determine the overall grade for the class (for that particular 9-week period). The following table presents one student's performance to these priority learning goals. Looking at the performance, please discuss and determine the summative score to be awarded to the student for each of the seven goals.

Priority Standard	Artifact #1	Artifact #2	Artifact #3	Artifact #4	Artifact #5	Artifact #6	Overall Performance
#1	Obtrusive	Obtrusive	Unobtrusive	Unobtrusive	Obtrusive	Common	
#1	1.5	2	3	2	2.5	2.5	
#2	Unobtrusive	Obtrusive	Obtrusive	Common	Student-Gen		
#2	2	2.5	2.5	3	3		
#2	Obtrusive	Obtrusive	Obtrusive	Unobtrusive	Obtrusive	Obtrusive	
#3	3	3	3	2.5	2	3	
44	Unobtrusive	Obtrusive	Unobtrusive	Common		Student-Gen	
#4	3	3.5	3.5	3		3	
45	Unobtrusive	Unobtrusive	Unobtrusive	Unobtrusive	Obtrusive	Obtrusive	
#5	2	2	2	2	2.5	3	
#6	Obtrusive	Obtrusive	Obtrusive	Common			
#6	3	3	2	2.5			
47	Unobtrusive	Unobtrusive	Obtrusive	Common			
#7	2	2	3	2.5			

Part II:

Mrs. Edwards has informed her students (and parents) that they will receive formal feedback at the end of each nine-week grading period in two ways: 1) by priority learning goal; and 2) an overall grade for the class (percentage score). In the previous table, you determined the feedback (based on the proficiency scale) that will be provided for each learning goal. Now, please discuss the overall grade for ELA. Use the conversion scale below to assign a letter grade for the nine-week period, which represents performance across the priority learning goals.



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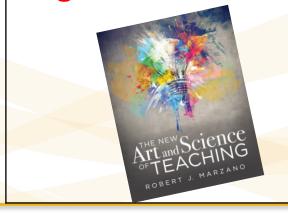
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Lotus Chart								
	Reliability			Formative Scores			Unobtrusive Assessments	
	Student Generated Assessments			Common Assessment			Validity	
	Fair/Unbiased			Obtrusive Assessments			Measurement Error	

Critical Components...



WOW!!!!!!!

- The **KEY!!!!**
 - Doing Great Job
 - What you do works!
- How can we do better?
- Expect best from our kids
- Need to model best from us!



- Have a purpose and use best strategy!
 - This is hard but you guys up in top %!!!!!!



Great Job

- Most difficult content we teach at Marzano
 - Transformational
 - Research is clear, it works, it's proven change is hard!!
- Only Way to Get Better
 - Threw a lot at you
 - You won't "Have This" all today
 - Work Together
 - Practice and Reinforce New Knowledge, Common Vocab
- PLCs Come into Play
 - Could be a focus for an entire year
 - Work through and practice these skills!

