


The Art & Science of Teaching

A Common Language for Instruction


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Only in Education....

Test questions and the answers students provided.....



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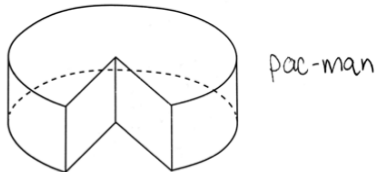
F in Exams

I didn't fail the test,
I just found 100 ways
to do it wrong.

—BENJAMIN FRANKLIN,
politician, author, and inventor

F in Exams

The solid figure can best be described as:



pac-man

Change $\frac{7}{8}$ to a decimal.

7.8

F in Exams

Expand $2(x + y)$

$2(x+y)$
 $2(x+y)$
 $2(x+y)$
 $2(x+y)$

Upon ascending the throne the first thing Queen Elizabeth II did was to . . .

Sit down

F in Exams

Why was the Berlin Wall built?

Germany was competing
with China.

F in Exams

What were the circumstances of Julius Caesar's death?

Suspicious ones

Correct the error in the sentence:
The girl were extremely intelligent.

The boy were extremely intelligent.

What scale do seismologists use to measure the force of earthquakes?

*A very strong one
(not glass).*

F in Exams

Adam cuts his arm. Blood gushes out and is red in color. What does this show?

*He is not a robot,
he's a real boy!*

F in Exams

To change centimeters to meters you _____.

+ take out centi.


F in Exams

The road to success is always under construction.

—LILY TOMLIN,
actress

The reality of our business...

- There is rarely, if ever, a perfect day of teaching....



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2 minute discussions



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Do you agree or disagree?

What's the role of talent?

Effective teachers are made, not born.

What's the role of deliberate practice?




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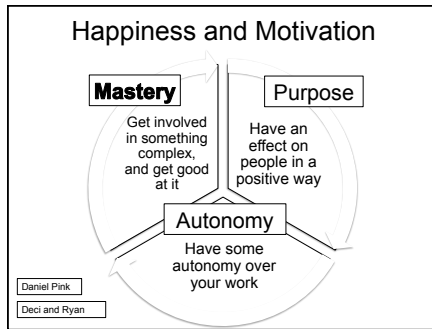
Do you agree or disagree?

Most people are satisfied with competence, and never strive for expertise.



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In Learning Organizations..

Everybody Should Be Learning...

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"What Matters Very Much is Which Classroom?"

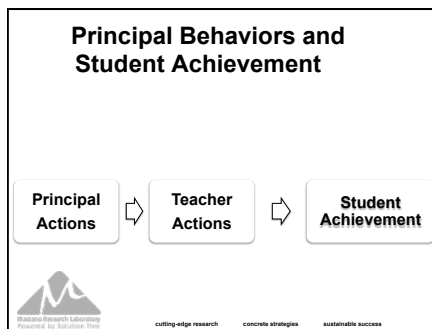
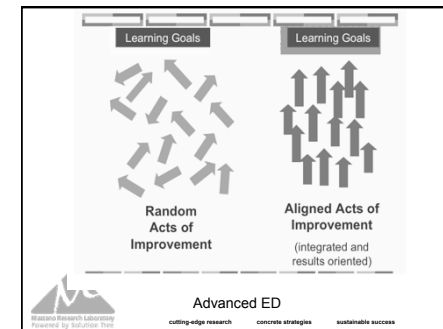
"If a student is in one of the most effective classrooms, he/she will learn in 6 months what those in an average classroom will take a year to learn. And if a student is in one of the least effective classrooms in that school, the same amount of learning takes 2 years."

Deborah Loewenberg Ball, Dean of Education, University of Michigan

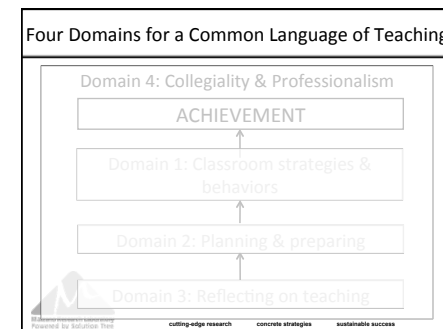
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School and District Leadership **not only matters**, but also has a **direct correlation and measurable effect on student achievement!**

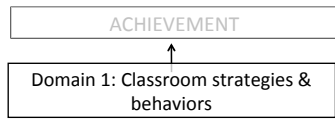
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- ### Where should a school begin?
- Develop a common language of teaching
 - Provide opportunities for focused feedback and practice
 - Provide opportunities for observing and discussing effective teaching
 - Require individual teacher growth and development plans on a yearly basis
-
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Four Domains for a Common Language of Teaching



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The Art and Science of Teaching



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Nine Lesson Design Questions

1. Learning Goals and Feedback
2. Interacting with New Knowledge
3. Practicing and Deepening
4. Generating and Testing Hypotheses (application)
5. Student Engagement
6. Establishing Rules and Procedures
7. Adherence to Rules and Procedures
8. Teacher-Student Relationships
9. High Expectations

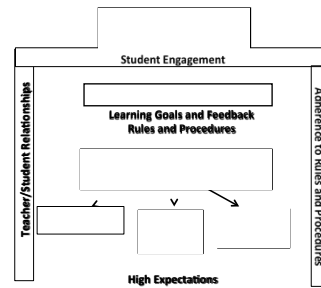
The Art and Science of Teaching

Three Segments of a Lesson

1. Segments that involve **routine behaviors**.
2. Segments that address **content** in specific ways.
3. Segments that are **enacted on the spot**.



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Today we will focus on Routine Lesson Strategies

INVOLVES ROUTINES



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ROUTINE SEGMENTS

- Component 1.1 (Goals/Scales)
- Component 1.2 (Celebrate Success)
- Component 5.1 (Organizing the Classroom)
- Component 5.2 (Rules/Procedures)
- Component 6.3 (Tracking Student Progress)

ROUTINE SEGMENTS

- Component 1.1 (Goals/Scales)
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- Component 5.1 (Organizing the Classroom)
- **Component 5.2 (Rules/Procedures)**
- Component 6.3 (Tracking Student Progress)



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Do some Solo Thinking...

What are some key rules and procedures teachers need to establish for a successful learning environment?



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Please compare lists with your elbow partners....



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Did you list any of these?

- Attention and Refocus Signal
- Transition Signal
- Strategies to group and re-group learners
- Bell ringers or sponge activities

Age = Attention Span

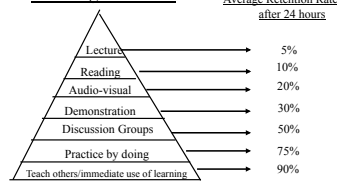
- Change of state for the learner is needed...
- Tops out at 18-20 minutes...
- Adult learners need change also...



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Page 2

Boosting Retention



Adapted from David Sousa's figure 3.8 in his text, [How the Brain Learns](#)



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Transition Signal....

- So they know for sure when you want them to move...
- Mine will be: When I say "GO"



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Attention and Refocus Signals

- Consistent Location (Physical Cue)
- Consistent Language (Verbal Cue)
- Expected Result
- Sound of Silence



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My Attention and Refocus Signal

- Move to the front and center.
- Announce time remaining in activity.
- Count down last 10 seconds out loud.
- At "Zero" everyone is in seat and ready.
- If anybody isn't ready, I'll just wait....



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Processes for grouping and re-grouping learners.



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Table Team or Table Family

- Everyone at your table...
- Best if groups are 5 or smaller...
 - Use teams of teams to stay below 5



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Each team needs a facilitator...

- When I count to 3 everybody point at someone at your table...
- Person with the most pointing at you please stand up...
- You get to pick the facilitator for the group.



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Close Partners

- Groups of 2 or 3 with people sitting near you but not at your table.



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Across the Room Partners...

- Groups of 2 or 3 with people not sitting near you in the room.
 - Cross-town Buddies
 - Blind Date



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Elbow Partners....

- Groups of 2 or 3 to your left and/or right...
- You could elbow them...but please don't
 - Stand when working with elbow partners



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Speed Date Discussions

- 1 minute discussion (group of 2 or 3)
- 10 seconds find new partners
- 1 minute discussion....
- Repeat as needed...



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Learning Appointments

- Schedule learning appointments with groups of 2 or 3.
- Record your appointments so you remember who you are meeting with.



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What other grouping strategies do you use?

Please share your ideas with your table family



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Some important considerations

- Why 5 or less?
- Why groups of 2 or 3?
- Why use more than one strategy?



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Additional Ideas...

- What problems of practice can you address by implementing a classroom routine or procedure?



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What to do if I've Missed Class

- E-mail your teacher before class. Meredith.Lawrence@RoundRock.org
- If you can't e-mail before class, e-mail right after class.
- Look for notes or assignments online.
<http://teacherweb.com/TX/RoundRockHighSchool/Lawrence/A.aspx>
- Ask classmates for information about what happened and ask that they share notes.
 - Ask three friends before you ask your teacher.
 - Ask friends on Facebook or another online social network.
- Come by before school or after school prior to the next class.
 - Ask for a WOW pass.



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OUR CLASSROOM NORMS

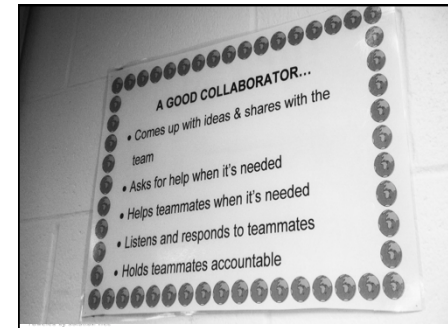
Teacher will:

- Be creative and allow creativity
- Have engaging texts
- Allow choice in class
- Allow student directed discussion/collaboration
- Accept multiple interpretations
- Have fun
- Help students connect and understand
- Show Respect

- Offer tutorials
- Be specific in feedback
- Motivate us
- Meet us at our level

Students will:

- Stay focused
- Produce Quality Work
- Show Respect
- Be Diligent
- Participate
- Don't press up against the door before bell rings
- Trust
- Be honest
- Be on time
- Turn in work on time
- Try hard
- Aim high – for a 4 or 5
- Be kind to each other in class
- Agree on the path
- Buy in and believe



What to say instead of "I Don't Know"

- | | |
|--|---|
| <ul style="list-style-type: none"> May I please have some more information? | <ul style="list-style-type: none"> May I consult an expert? (use the text/notes or ask additional questions) |
| <ul style="list-style-type: none"> May I have some more time to think? | <ul style="list-style-type: none"> May I ask a friend for help? |
| <ul style="list-style-type: none"> Would you please repeat the question? | <ul style="list-style-type: none"> May I poll the class? |
| <ul style="list-style-type: none"> Where could I find information about that? | <ul style="list-style-type: none"> May I have a clue or fifty-fifty? |

ROUTINE SEGMENTS

- Component 1.1 (Goals/Scales)
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PLC Questions #1 and #2

- What do we want our students to learn?
- How will we know if they have learned it?
- What will we do if they have not learned what we want them to learn?
- What will we do if they already know it?



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Learning Goals

Implementing the curriculum at the classroom level.



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Learning Goals and Scales

Implement the curriculum at the classroom level.



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What are learning goals?

A learning goal is a statement of what students will understand and/or be able to do.

Think in Terms of Two Types of Goals...



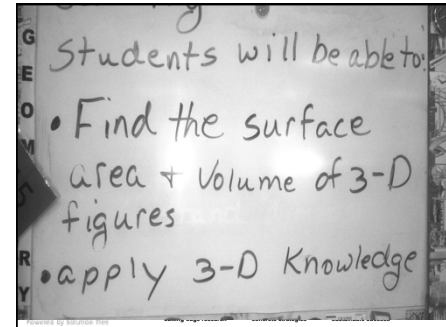
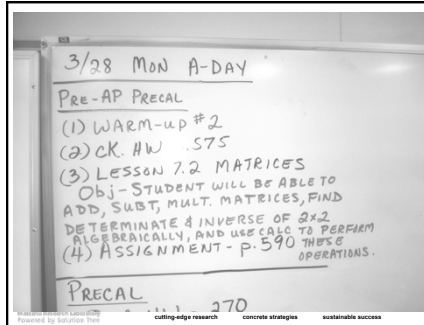
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Professional Dialogue

- How do you communicate learning goals to your students?



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For each area of teacher expertise:

Distinguished 4	Proficient 3	Basic 2	Unsatisfactory 1
Adapts and creates new approaches to the strategies for unique student needs and situations	Uses the strategies; monitors effects on students; adjusts to achieve desired outcome	Uses the strategies in this area of teacher expertise	Uses strategies incorrectly or with aspects missing



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For each area of teacher expertise:

Distinguished 4	Proficient 3	Basic 2	Unsatisfactory 1
Adapts and creates new approaches to the strategies for unique student needs and situations	Uses the strategies; monitors effects on students; adjusts to achieve desired outcome	Uses the strategies in this area of teacher expertise	Uses strategies incorrectly or with aspects missing



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Formative Assessment Focus on Learning

Review the following research descriptions...



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"the process used by **teachers and students** to recognize and respond to student learning in order to enhance that learning, during the learning." (Cowie & Bell 1999 p. 32)

"assessment carried out **during the instructional process** for the purpose of improving teaching or learning" (Shepard et al., 2005, P. 275)



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"Formative assessment refers to frequent, interactive assessments of students' progress and understanding to **identify learning needs and adjust teaching appropriately**" (Looney, 2005, P. 21)

"A formative assessment is a **midstream tool to identify specific student misconceptions and mistakes** while the material is being taught"

(Kahl, 2005, p. 11)



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Discussion Topic

- What does formative assessment mean to you?
- What are your current strategies for formative assessment?



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The Challenge

Goals must be challenging, yet attainable for students.



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Students come with unique gaps in their abilities and previous learning.



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"I have over 25 students in my class."

- **Problem:**
How can I write a goal for all my students that is both challenging and attainable?



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"I have over 25 students in my class."

- **Solution:**
Construct goals at multiple levels of difficulty.



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Create Proficiency Scales



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At the Classroom level...

- We need goals at **various levels** that....
- Identify **Learning Progressions** which....
- Are necessary to achieve a **Target Goal**.




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Begin by designing (and prioritizing) learning goals in all subject areas



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Curriculum should be Guaranteed and Viable



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Discussion Topic

What does it mean to have a guaranteed and viable curriculum?




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What's a guaranteed and viable curriculum?

- A "guaranteed" curriculum means that we ensure it is taught in every classroom teaching the same course.
- Examples:
 - All English I classes have the same essential learning targets identified.
 - All Biology classes have the same essential learning targets identified.
 - The Algebra I story....

Viable Curriculum


- Viable means we are able to teach the curriculum **for understanding** in the time available.
- Teach for understanding....



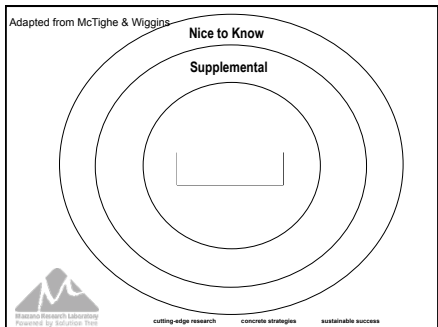
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Identify Essential Learning

Step One.



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What are the criteria for essential?

- **Endurance** (Will this provide knowledge and skills that will be of value beyond a single test date?)
- **Leverage** (Will this provide knowledge and skills that will be of value in multiple disciplines?)
 - Inquiry, critical thinking, inferences, problem solving
- **Readiness for next level of learning** (Will this provide students with the "tools" they need for success at the next level or grade.)

Reeves, D. Cited in Ainsworth, L. (2003). "Unwrapping" the Standards. Englewood, CO. Advanced Learning Press.


Essential Learning Target Matrix

Standard	Endurance = 1	Leverage = 1	Readiness = 1	State Tested = 1	National Tested = 1

Essential Learning Target Matrix					
Standard	Endurance = 1	Leverage = 1	Readiness = 1	State Tested = 1	National Tested = 1
Explain the steps of the scientific method.	1	1	1	1	1

Using the Matrix...


- PLCs and/or Departments
- Discuss the standards, use the matrix.
- Not everything will make the list....



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“For these are all our children. We will profit by, or pay, for whatever they become.”

James Baldwin



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Welcome Back!


Let's Review



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Talk a Mile a Minute

- Students are given a list of terms that have been organized into categories.
- Each team designates a talker.
- The talker tries to get the team to say each of the words by quickly describing them.
- The talker is allowed to say anything about the terms while talking but may not use any words in the category title or any rhyming words.
- The talker keeps talking until the team members identify all terms in the category.
- If members of the team are having difficulty with a particular term, the talker skips it and comes back to it later.



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Things Associated With Yesterday



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Things Associated With Yesterday


Instructional Framework

Expertise

Routine Segments

Retention

Focused Feedback



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MORE Things Associated With Yesterday



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MORE Things Associated With Yesterday


Professional Growth

Domain 1

Pedagogical Skills

Learning Goals


Dr. Phil



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Question about teaching the learning goal....

When you begin a new piece of knowledge...The first time learners are exposed to it.



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Scales = a series of learning goals or learning progressions



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Organize learning goals into a scale

- Advanced = 4.0 More complex learning goal
 - Above and beyond the target goal
- Proficient = 3.0 target learning goal
 - At the level identified in the standards
- Progressing = 2.0 simple learning goal
 - Foundational knowledge needed to reach level 3

Basic Proficiency Scale


4 In addition to exhibiting level-3 performance, in-depth inferences and applications that go BEYOND level 3.

3 The Learning Goal: What you expect the student to know and be able to do to be considered proficient.

2 The simpler or foundational knowledge that is necessary as a step to mastery of the score 3.0
INCLUDES CRITICAL CONTENT VOCABULARY HERE

1 With HELP, a partial knowledge of some of the simpler and complex details and processes


0 Even with help, no understanding or skill demonstrated



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Proficiency Scales

Level 1 Beginning	Level 2 Progressing	Level 3 Proficient	Level 4 Advanced



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Basic Scale Includes:


Advanced or 4	Application of the knowledge and skills to new and novel situations.
Proficient or 3	The learning goal at the level required in the standards.
Progressing or 2	Key vocabulary terms. Basic understandings or fundamental skills.

Scale for Types of Business Ownership

Advanced	Apply the knowledge to a business scenario and provide written rationale for your decision.
Proficient	Explain the advantages and disadvantages of three types of business ownership.
Progressing	Know Key Vocabulary: Sole-Proprietorship, Partnership, Corporation Describe the concepts of profit and liability.

Learning Goal Only

- Explain the advantages and disadvantages of three types of business ownership.



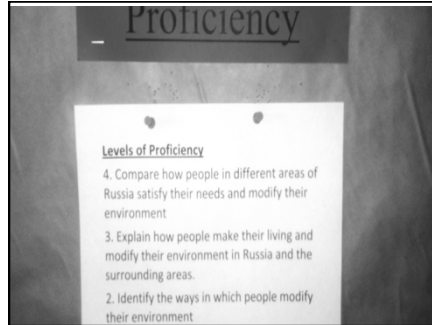
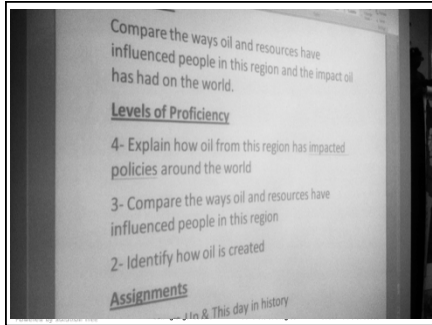
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Atmospheric Processes and Water Cycle


4 Infer relationships regarding atmospheric processes and the water cycle.

3 An explanation of:
• How the water cycle processes impact climate changes
• The effects of temperature and pressure in different layers of Earth's atmosphere

2 • 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.




What about Special Education?



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Special Ed. and Scales...

- Accommodations or Modifications?
- Accommodations = Regular Scale if we properly meets accommodations.
- Modifications = Modify scales in conjunction with the IEP goals.




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Consider having students flesh out the meaning of the scale.




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- 4
- 3 **I know it just the way my teacher taught it.**
- 2
- 1
- 0




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- 4
- 3 I know it just the way my teacher taught it.
- 2 **I know some of the simpler stuff but can't do the harder parts.**
- 1
- 0




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- 4 **I know it even better than my teacher taught it.**
- 3 I know it just the way my teacher taught it.
- 2 I know some of the simpler stuff but can't do the harder parts.
- 1
- 0



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- 4 I know it even better than my teacher taught it.
- 3 I know it just the way my teacher taught it.
- 2 I know some of the simpler stuff but can't do the harder parts.
- 1 **With some help, I can do it.**
- 0



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4 I know it even better than my teacher taught it.

3 I know it just the way my teacher taught it.

2 I know some of the simpler stuff but can't do the harder parts.

1 With some help, I can do it.

0 **Even with help, I can't do it.**




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PLC Question # 2

- How will we know if our student's have learned what we want them to learn?



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We live in a data-driven world



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We can get data-driven to the point of distraction.




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Data-based decisions are not about gathering reams of data

They are about gathering useful, timely data.




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We need timely, usable data.

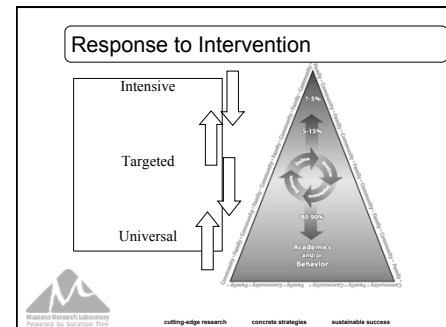
Critical data-based decisions....

- Come from classroom assessments....
- Occur frequently....(even daily)
- Are specific regarding performance....
- Are focused on growth....
- Lead directly to learning....




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Level 1 Beginning	Level 2 Progressing	Level 3 Proficient	Level 4 Advanced
✗	✗	✗	


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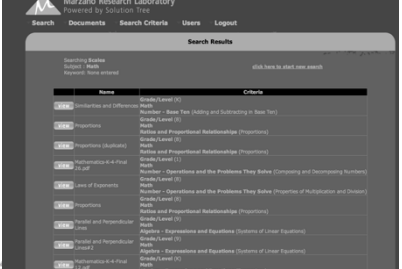
Marzano Research Laboratory will help you!

- Website
- <http://www.marzanoresearch.com>
- Free resources
- Proficiency Scale Bank
- Email for user name
- Pick a password

Searchable Site...



Provides Samples to Select...



Strand: Processes and Interactions of the Earth's system		Topic: Atmosphere, Weather, and Climate	
Grade 7			
Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.	Sample Task	Design a system to transfer heat or another planet to create the same air mass characteristics found on Earth.
Score 3.5	In addition to scores 3.0 performance, in-depth inferences and applications with partial success.		
Score 3.0	The student: describes the composition of Earth's atmosphere and how it circulates as air masses describes the role atmosphere plays in precipitation, reflecting/absorbing light, and trapping heat. The student exhibits no major errors or omissions.		Make and defend a model of the composition and movement of air masses. Create a "help wanted" job description brochure for Earth's atmosphere.
Score 2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content.		
Score 2.0	There are no major errors or omissions regarding the simpler details and processes as the student: recognizes or recalls specific terminology such as: - atmosphere, heat, precipitation, air mass recognizes or recalls accurate statements about the composition of the Earth's atmosphere recognizes or recalls accurate statements about the role of the atmosphere However, the student exhibits major errors or omissions regarding the more complex ideas and processes.		List the gases and/or solids and liquids that make up our atmosphere. State the role that atmosphere plays in precipitation or reflecting/absorbing heat. Answer fill in the blank questions regarding the meaning of vocabulary terms such as atmosphere, heat, etc...
Score 1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content.		
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
Score 0.5	With help, a partial understanding of the 2.0 content but not the 3.0 content.		
Score 0.0	Even with help, no understanding or skill demonstrated.		


Alignment

Curriculum Standards Classroom Instructional Objectives and Activities Classroom Assessment


Topic:	Scale Worksheet	Classroom Instructional Activities	Assessments
Score 4.0 (Exceeding) - More complex	Deconstructions of Learning that go above and beyond what was explicitly taught.		
Score 3.0 (Meeting) - The Learning Goal or Expectation			
Score 2.0 (Approaching) - The Simpler Stuff	Foundational Knowledge/Simpler Procedures, Isolated Details, Vocabulary		

PLC Question # 2

- How will we know if our student's have learned what we want them to learn?


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Now, you can more accurately connect assessment items or opportunities to the scale = construct validity.


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Three types of assessment items to measure the knowledge and skills defined

- **Level 2 items:** Simpler details and processes that have been explicitly taught
- **Level 3 items:** Complex ideas and processes that have been explicitly taught
- **Level 4 items:** Inferences and applications that go beyond what was taught

With your table family...

- Using the proficiency scale for Atmospheric Pressure and Water Cycle...
 - Develop 1 assessment item for level 3.
 - Develop 1 assessment item for level 2.
 - Develop 1 assessment item for level 4.



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Atmospheric Processes and Water Cycle

- | | |
|---|--|
| 4 | Infer relationships regarding atmospheric processes and the water cycle. |
| 3 | An explanation of: <ul style="list-style-type: none">• How the water cycle processes impact climate changes• The effects of temperature and pressure in different layers of Earth's atmosphere |
| 2 | <ul style="list-style-type: none">• Recognize and recall basic terms such as: climatic patterns, atmospheric layers, stratosphere, troposphere.• Recognize or recall isolated details such as:<ul style="list-style-type: none">• Precipitation is one of the processes of the water cycle.• The troposphere is one of the lowest portions of the Earth's atmosphere |

Level 2.0 Items for Measuring Atmospheric Processes and Water Cycle

- Briefly **define** the following terms: climatic pattern, atmospheric layers, stratosphere
- **Identify** which of the following statements are true:
 - 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 altitude.



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Level 3.0 Items for Measuring Atmospheric Processes and Water Cycle

- **Explain** how evaporation affects the climatic pattern in areas around large bodies of water, like the shoreline communities of Lake Michigan.
- Assume that a weather balloon traveled up into the stratosphere. **Explain** what would happen as it progresses through the various layers of the atmosphere.



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Level 4.0 Item for Science Test on Atmospheric Processes and Water Cycle

Complete the following analogy and **explain** why it is accurate:
Condensation is to evaporation as _____ is to _____,
because...



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ROUTINE SEGMENTS

- Component 1.1 (Goals/Scales)
- Component 1.2 (Celebrate Success)
- Component 5.1 (Organizing the Classroom)
- Component 5.2 (Rules/Procedures)
- Component 6.3 (Tracking Student Progress)



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Tracking Student Progress

- Occurs formally and informally
- Empowers teachers to provide valuable feedback.



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Interesting research about feedback...



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Predict the effect on student achievement for each type of feedback.




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Types of Feedback

Type of Feedback	Number of Studies	% Student Achievement Gain or Loss
Right or Wrong	6	--
Teacher provides correct answers	39	
Students understanding assessment criteria vs. not understanding	30	
Teacher explains feedback	9	
Student reassessed until correct	4	


Bangert-Drowns, Kulik, Kulik, & Morgan.



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An interesting finding....(Carless, 2006)

- Asked students and teachers whether teachers provided detailed feedback that helped students improve their next assignments...
- 70% teachers claimed they provided such detailed feedback often or always
- 45% of students agreed with their teachers' claims




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Grading & Feedback Study

- Grade only
- Feedback only
- Grade and feedback combined...
- Which group do you think showed the greatest student achievement?

Effects of no feedback, task-related comments, and grades on intrinsic motivation and performance.
Journal of Educational Psychology, 78, 210-216.




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Grading & Feedback Study


- Grade only
- Feedback only
- Grade and feedback combined...
- Unfortunately, the grade "trumps" the comments if used together.

Effects of no feedback, task-related comments, and grades on intrinsic motivation and performance.
Journal of Educational Psychology, 78, 210-216.



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We wanted to know so we asked the question:




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How often have you seen another student at your school...

- Copy someone else's homework?
 - Every Day = 19.9 %
 - Many Times = 25.5 %
 - A Few Times = 31.9 %
 - Once 10.1 %
 - Never 12.6 %

RRHS student climate survey 2009-2010



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New app aims to turn Facebook into a study tool


- The Facebook application Hoot.me diverts students away from their wall and news feed and asks them, "What are you working on?" It then connects students with live group-study sessions on their chosen topic.



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Teachers should not abandon homework. Instead, they should improve its instructional quality.


Robert Marzano
Educational Leadership, March 2007



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Have students correct their own!

- Aligns with feedback research
 - Timeliness
 - Teacher explains answers/corrections
 - Becomes OK to make an error (Learning)
- Provides formative information to the student and doesn't have to be scored.



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Homework quiz strategy.

- Homework becomes practice and instructional feedback....
- It also becomes the best way to study for the homework quiz....
- The homework quiz becomes a formative assessment or score....
- Serves as one piece of evidence of learning....



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2.	Find the inverse: $y = \frac{4}{5}x - 8$
3.	Find the inverse: $y = \frac{3x-4}{13}$
4.	The formula: $C = \frac{5}{9}(F - 32)$ gives the degrees Celsius as a function of degrees Fahrenheit. Find the inverse of the

Feedback is most powerful when it comes *from the student to the teacher.*

Hattie, J. (2009). *Visible learning a synthesis of over 800 meta-analyses relating to achievement.* New York, NY: Routledge



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“Feedback from student to teacher helps make learning visible” (Hattie, 2009).

- Teachers seek
 - What do students know and understand?
 - Where are they making errors?
 - When do they have misconceptions?



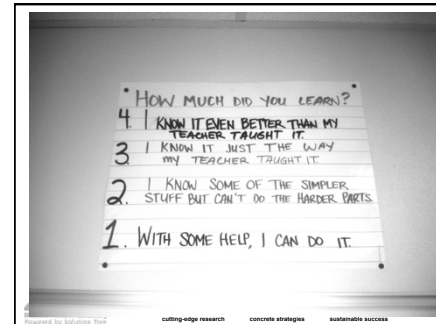
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Quick Formative Assessment

Instructional Feedback



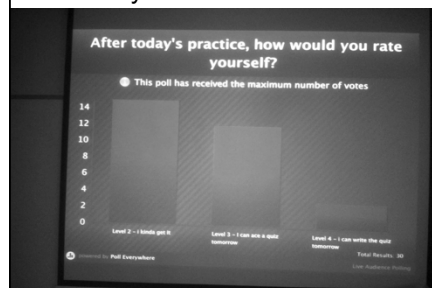
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More formal formative assessment.



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Exit Tickets and Student Surveys

Quick to yield data:

- Don't have to be formal
 - Can occur on a note card or paper
 - Used for any subject matter
 - At numerous grade levels




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 **TICKET OUT THE DOOR**

One thing I understand really well after today is:

I still have questions/want more information about...

I am really excited about...


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Name: _____ Period: _____ Ticket Out Do _____

Level 2 Factor the expression completely:
 $5x^2y^2 - 15x^2y^2 + 20x^2y^2$


Level 3 Solve the equation by factoring:
 $25x^2 + 45x = 10$

Level 4 Factor the expression completely, then solve:
 $6n^2 - n^2 - 24n + 4 = 0$

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Having Students Chart Their Progress on Learning Goals

- 14 experimental-control studies conducted at Marzano Research Laboratory
- In research to date, this practice is associated with a 32-percentile point gain in student achievement.

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Keeping Track of my Learning

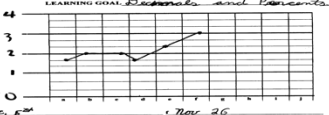
Name: S. H.

Learning Goal: Understand and use decimals and percents

My score at the beginning: 8 My goal is to be at 3 by Nov 30


Specific things I am going to do to improve: Work 15 min three times a week

LEARNING GOAL: Decimals and Percents



Oct 12 Nov 26

Oct 12 Oct 20 Oct 27 Nov 12

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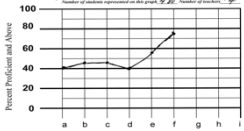
TRACKING STUDENT PROGRESS: School

School: YV2 Middle School


Grade/Subject: 8th grade 2 Reading Period Time Spent Sp. 20

Learning Goal: Write paragraph with supporting details, sentences, (Order) (Organization)

Percent Proficient and Above



Sept 1 Sept 15 Sept 30 Oct 15 Oct 30 Nov 15 Nov 30

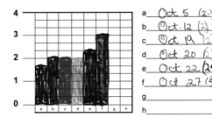
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Tracking My Own Learning

Student Name: H. Date: _____

Learning Goal: Understand and use decimals and percents

My score at beginning: 8 My goal: 3 by Nov 30




Oct 5 Oct 12 Oct 19 Oct 26 Oct 30 Nov 5

1. I make many more mistakes; I get them understood right.

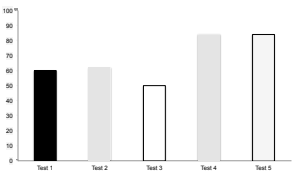
2. I make some more mistakes, my score stays I don't understand some important rules.

3. I make no more mistakes; maybe I still have but understand what is important.


4. I make no mistakes; I understand completely.

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Spelling Test Scores



Test 1: 60, Test 2: 65, Test 3: 50, Test 4: 80, Test 5: 85

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Key Learning - Understand the concepts of Intermolecular Forces

Name: _____ Learning Targets: _____

4. Draw diagrams of intermolecular forces


Describe how Polarity affects the strength of intermolecular forces present in a substance. Compare the boiling points of substances.

Describe the nature of a network solid.


Describe how IMF affects boiling & melting points. Explain how IMF affects the physical properties of a substance.

7

Erik, AP Chemistry, ThunderRidge HS, DCSD


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Consider also tracking effort and preparation....

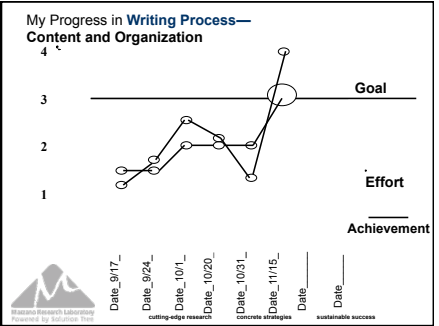
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Scale for Effort and Preparation

Score 4.0	To be sure I accomplish my goal, I'm trying harder and preparing more than I think is necessary.
Score 3.0	I'm trying hard enough and preparing well enough to accomplish my goal.
Score 2.0	I'm trying hard but not preparing as well as I could.
Score 1.0	I'm not trying very hard or preparing very well.
Score 0.0	I'm not really trying or preparing at all.



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H.S. History Teacher St. Louis

- Tracks student progress academically as correlated to preparation.
- Homework, test review guide, essay outline
 - Completed all three = Ave grade on test
 - Completed two = Ave grade on test
 - Completed one = Ave grade on test
 - Complete non = Ave grade on test

What has he found???


- Usually 30 points or more difference in the test between most and least prepared.
- Kids are shocked first time or two and many begin to prepare better.
- Makes excellent data for parent teacher conferences.



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Group discussion...


- How do you track student progress?
- What informal and formal methods do you use for formative assessment?



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ROUTINE SEGMENTS


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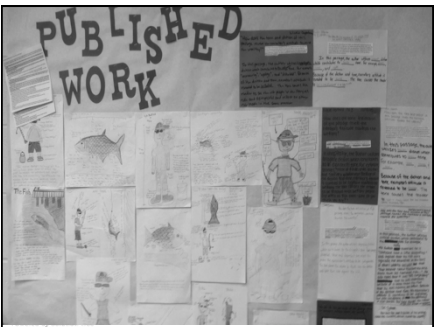
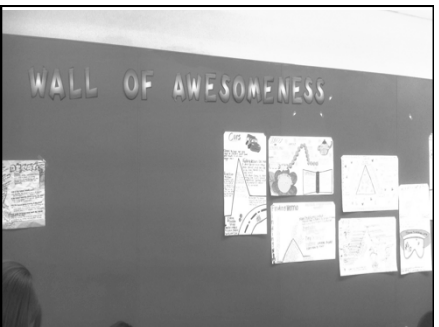
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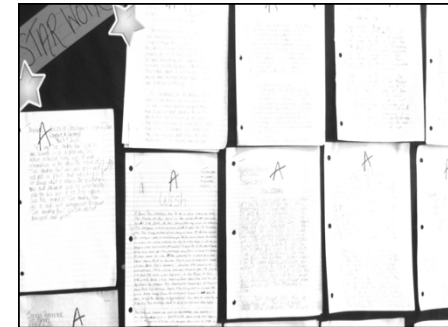
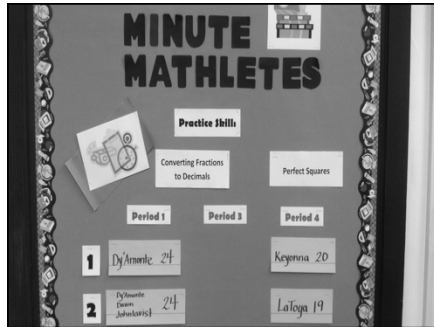
Discussion....

- What do you do to celebrate the success of your learners?




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Little things....Big differences....

- ATLAS program celebrations
- High school students not on track to graduate...some had dropped out once.



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