



Standards are the “what”
STEM PBL is the “how”



I have 3 goals for you for the next 2 hours:

- © I want you to know the Science Standards at your grade and at your bookend grade levels.
- © I want you to know more about Project-Based Learning.
- © I want you to collaborate with your team about a STEM project you can create this year.

Please write **your** goals in your notebook.

Real-world connections (video)

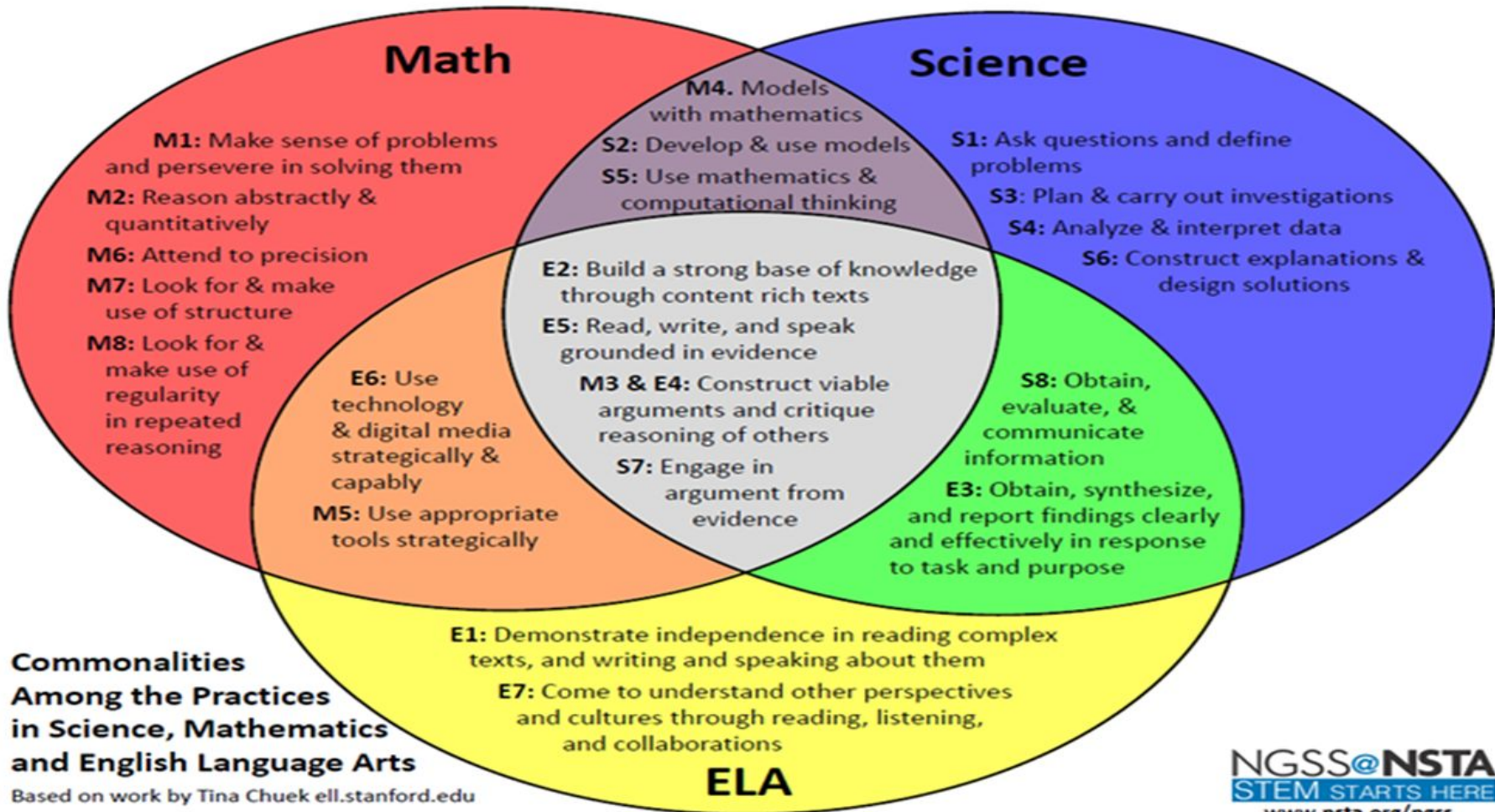


Not just dessert (video)



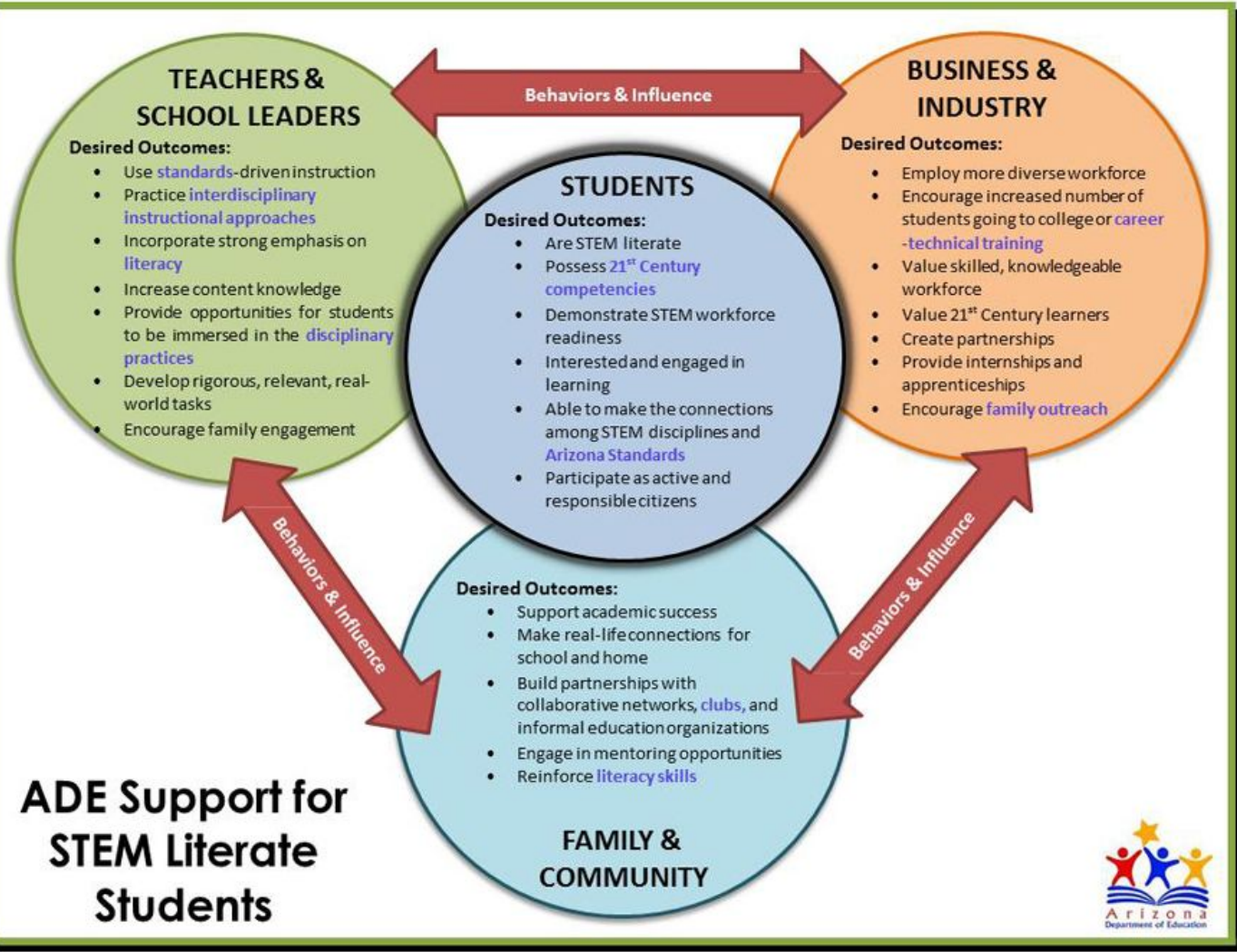
Practices in Mathematics, Science & Engineering, and Literacy

Math	Science & Engineering	Literacy
M1. Make sense of problems and persevere in solving them.	S1. Asking questions (for science) and defining problems (for engineering).	L1. Demonstrate independence in reading complex texts, and writing and speaking about them.
M2. Reason abstractly and quantitatively.	S2. Developing and using models.	L2. Build a strong base of knowledge through content rich texts.
M3. Construct viable arguments and critique the reasoning of others.	S3. Planning and carrying out investigations.	L3. Obtain, synthesize, and report findings clearly and effectively in response to task and purpose.
M4. Model with mathematics.	S4. Analyzing and interpreting data.	L4. Construct viable arguments and critique reasoning of others.
M5. Use appropriate tools strategically.	S5. Using mathematics, information and computer technology, and computational thinking.	L5. Read, write, and speak grounded in evidence.
M6. Attend to precision.	S6. Constructing explanations (for science) and designing solutions (for engineering).	L6. Use technology and digital media strategically and capably.
M7. Look for and make use of structure.	S7. Engaging in argument from evidence.	L7. Come to understand other perspectives and cultures through reading, listening, and collaborations.
M8. Look for and express regularity in repeated reasoning.	S8. Obtaining, evaluating, and communicating information.	



**Commonalities
Among the Practices
in Science, Mathematics
and English Language Arts**

Based on work by Tina Chuek ell.stanford.edu



ADE Support for STEM Literate Students





Time to jump in!



◎ Think:

◎ What do you know about the **Science** standards at your grade level?

◎ Write:

◎ Write Science standards for your grade level.

◎ Use a different post-it note for each standard.

◎ Stick it to your grade level poster.

◎ Categorize:

◎ As a grade level, categorize your post-it notes.



Break into your LETTER teams:

<p><u>K:</u> Kimberly O. Margaret Laura Mary Angela Alexandra</p>	<p><u>1st:</u> Katy Brandie Cynthia</p>	<p><u>2nd:</u> Rachel C. Clarissa Danielle Kelli</p>
<p><u>2nd:</u> Monica Sheri Valerie</p>	<p><u>3rd:</u> Lynnda Mayme Carlynn Jennifer</p>	<p><u>4th:</u> Tanya Holly Deena</p>
<p><u>5th:</u> Cathleen Rachel H. Amy M.</p>	<p><u>5th:</u> Aaron Kimberly D. Wendy Amy J.</p>	<p><u>Jr. High:</u> Carol Marie Eric</p>



Sort the Standards

- ◎ Go to your Strand Poster
 - ◎ A: Inquiry Process (Strand 1)
 - ◎ B: Science in Personal & Social Perspectives (Strand 3)
 - ◎ C: Life Science (Strand 4)
 - ◎ D: Earth and Space Science (Strand 6)

- ◎ Read your standards strips and tape them to the appropriate grade level. (K, 1, 2, 3, 4, 5, Jr. High)
 - ◎ Keep in mind that some grade levels might not teach all standards.



Sort the Standards



◎ So, how did you do?

◎ Use the Science Standards Articulated by Grade Level to check

◎ Move any standards if you need to

◎ Walk around to each Strand Poster. Take special note of:

◎ The grade level **before** you

◎ **Your** grade level

◎ The grade level **after** you



Break into your GRADE LEVEL teams:

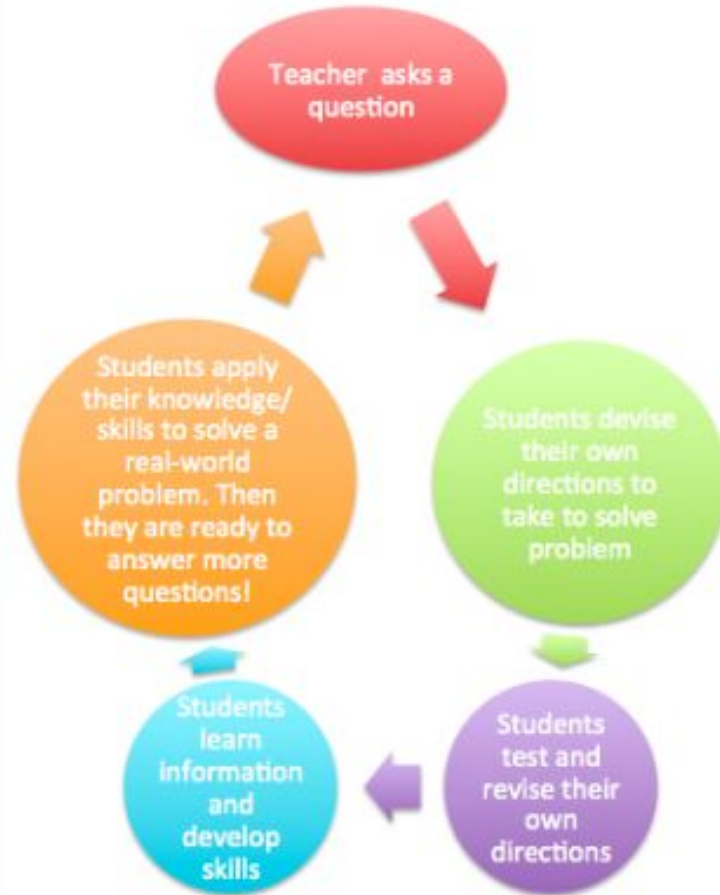
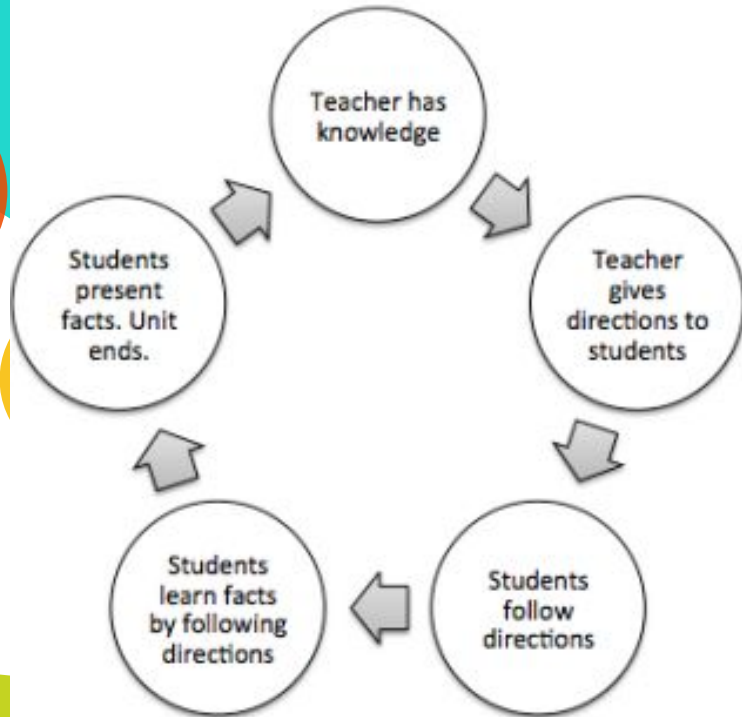
<p><u>K: 5 senses</u></p> <p>Kimberly O. Margaret Laura Mary Angela Alexandra</p>	<p><u>1st: habitats</u></p> <p>Katy Brandie Cynthia</p>	<p><u>2nd: weather</u></p> <p>Rachel C. Clarissa Danielle Kelly Monica Sheri Valerie</p>
<p><u>3rd: diversity, adaptation</u></p> <p>Lynnda Mayme Carlynn Jennifer Brenda</p>	<p><u>4th: erosion</u></p> <p>Holly Deena</p>	<p><u>5th: skeleton</u></p> <p>Aaron Kimberly D. Wendy Amy J. Cathleen Rachel H. Amy M.</p>
		<p><u>Jr. High: cells/osmosis</u></p> <p>Carol Marie Eric</p>

In your GRADE LEVEL teams:

- ◎ Look at the Life and Earth Science standards (strands 4 and 6) at your grade level.
- ◎ Brainstorm possible STEM units for your grade level:
 - ◎ Standards-driven instruction
 - ◎ Problem-based learning
 - ◎ Real-world connection
 - ◎ STEM template (August 12th/13th workshop)

“Doing Projects”

vs. Project-Based Learning



Reflection: 3-2-1

On the handout,

- ③ Write 3 things you discovered this week
- ③ Write 2 things you are going to implement in your classroom
- ③ Write 1 question you still have



August 12/13: Nature Center

- ⊙ Engineering and STEM Lessons

September 9/10: Game and Fish

- ⊙ PBL and Protecting Endangered Species

October 14/15: NPC

- ⊙ Plant Diversity

November: Frontier Room (Show Low)

- ⊙ Petrified Forest and Erosion

December 3: Webinar

- ⊙ Educational Technology

January 13/14: NPC

- ⊙ Population Analysis and Interpretation of Data

February 4: Webinar

- ⊙ Formative Assessments

March 10/11: Frontier Room (Show Low)

- ⊙ Presentations and DTAMS post-test

On-going:

- Meeting with your grade level team to co-write a STEM unit.
- Integrating STEM into your classroom
- Videotape yourself teaching your STEM lesson
- Analyzing student work
- Observe teaching your STEM lesson
(with Gail or Steve in late February/March)



Next Step in Our Adventure

Friday, August 12th 4 pm-7 pm
Saturday, August 13th 8 am-4 pm

White Mountain Nature Center

enJOY the rest of your summer!