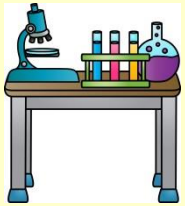
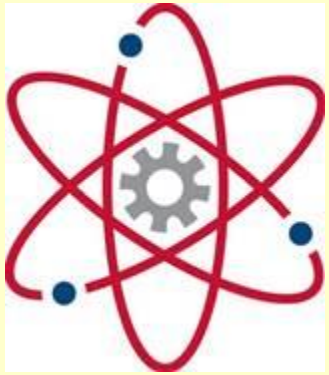
Garfield Gladifying STEM

Our Game Plan For Success!

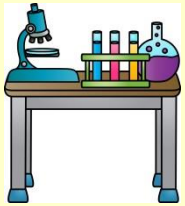


Garfield Demographics

- 86.5% Hispanic
- 9.1 % Native American
- 2.9% White
- 99.5% Free Meals
- 403 Students K-5





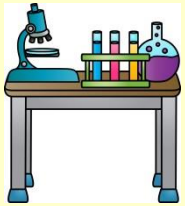




Garfield K-5 Classes

- K-3
  - 3 Teachers At Each Grade Level
  - All Day Kindergarten
- 4-5 Departmentalized

  90 minute Blocks 45 minute Core/45minute Workshop
  - Reading/Social Studies Teacher
  - Science/ Writing Teacher
  - Math Teacher
- Teachers have 30min Lunch-30min Planning 40 Min Grade Level PLC Daily

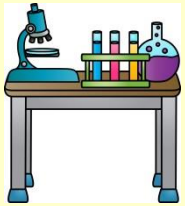


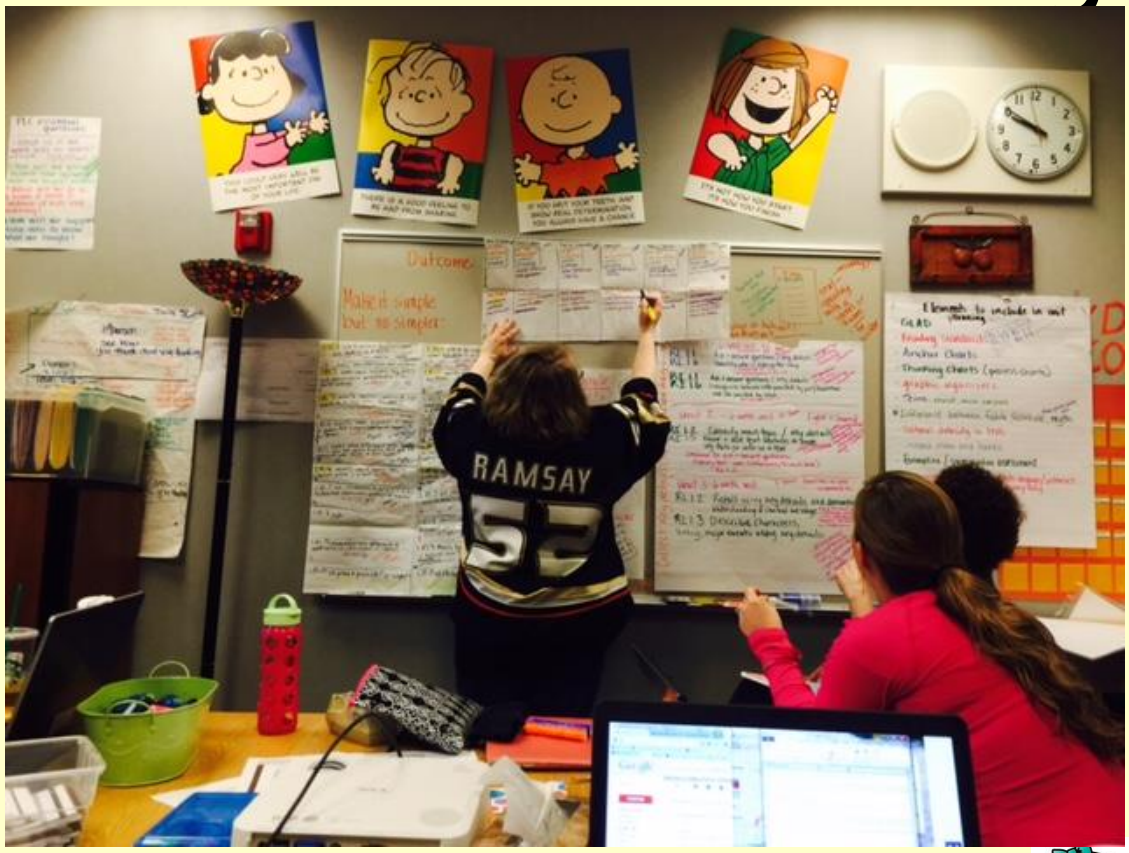

K-5 PLTW STEM

- PLTW STEM Journey 2013-2014
- Nation Wide PLTW Grant
- Our Master Scientist Margo Trudeau
- K-5 Six Staff Implementation of 2 Modules
- Gladifying PLTW 2 Modules
- 2014-2015 All Staff PLTW Certified
- NGSS Units of Study

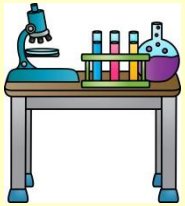



Backward Planning

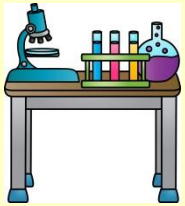





Backward Planning




Backward Planning

Kindergarten - Garfield 1

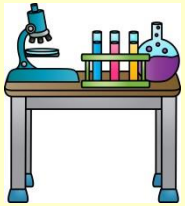
UNITS	ALL ABOUT ME	SCHOOL ENVIRONMENT	WEATHER
TIMELINE	3 WEEKS	6 WEEKS	6 WEEKS
ESSENTIAL UNDERSTANDINGS	Students will understand the everyone is unique and that's ok.	Understand the purpose for rules. There are different rules and expectations in every setting. Learning Rules is important to function well in a setting.	Weather impacts humans no matter where you are. People can design and create structures to lessen the impact of weather. Weather conditions occus in patterns over time.
SOCIAL STUDIES & SCIENCE STANDARDS	SOCIAL STUDIES	SOCIAL STUDIES	SCIENCE
	4.1.1 understands and creates timelines to show personal events in a sequential manner.	1.1.1 Understand the key ideas of justice and fairness in the context of the classroom.	K-ESS2-1 Use and share observations of local weather conditions to describe patterns over time.
	5.1.1 Undersands ones point of view.	1.1.2 Applies the ideals of justice and fairness when making choices or decisions in the classroom or on the playground.	K-PS3-1 Make observations to determine the effect of sunlight on Earth's surface.
	5.3.1 States own view points and listens to view points of others	1.2.1 Remembers who the people are that make and impliment the rules in a school.	K-PS3-2 Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.
	5.4.1 Retells and explains personal history.	5.1.2 Evaluates the fairness of ones point of view	K-ESS3-2 Ask questions to obtain information about the purpose of weather forcasting to prepare for, and respond to, severe weather.
		5.2.1 Understands how to ask questions about the school community and classroom.	
READING STRATEGIES (Matched to CCSS)	Schema	RL.K.7 Making Connections	Predicting
	Visualization	RL.K.1 & RL.K.4 Asking Questions	Confirming

G/S= Guidance and Support
P/S=Prompting and Support

D.D.W=Drawing, Dictation, and Writing

Lopez, Madden, Sanderson 3/31/2015



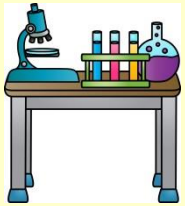




5th Grade Modules

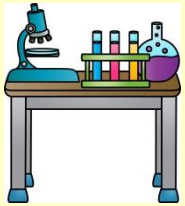
- **Robotics and Automation**

- **Robotics and Automation:**
  - **Challenge Programing**

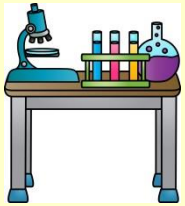



Engineering Design Challenge

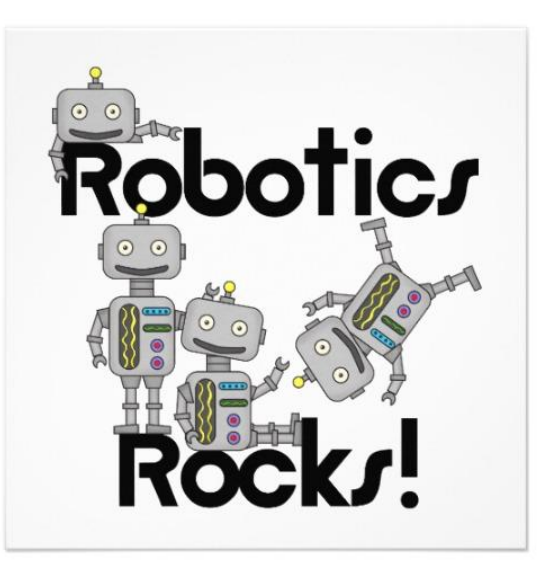


Engineers Programming Robots

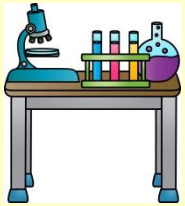


Team Tasks

- Roles
- Everyone Contributes
- Academic Language
- Builds Leadership
- They do GRR

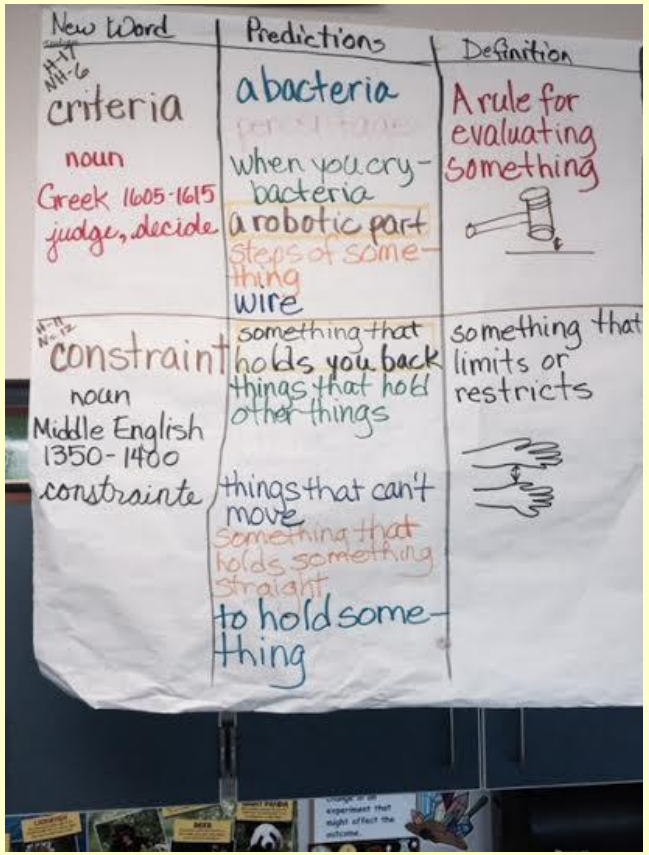




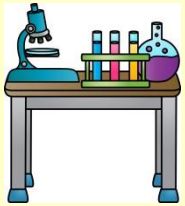




Cognitive Content Dictionary

- Major Component Modules
- Clarifying & building Vocab
- Big Idea

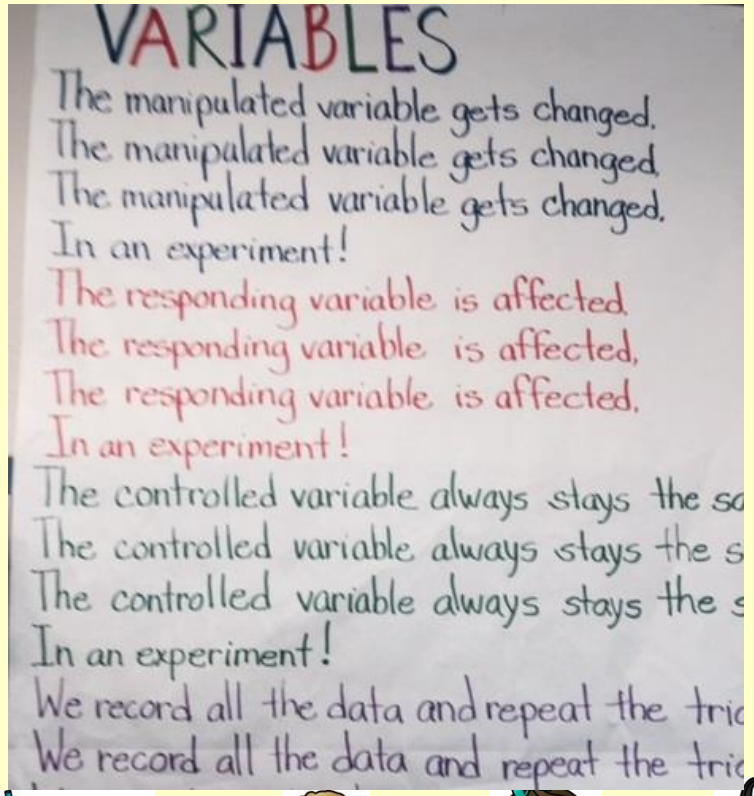


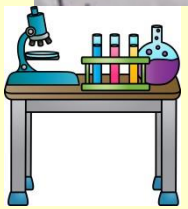



Variables Chant

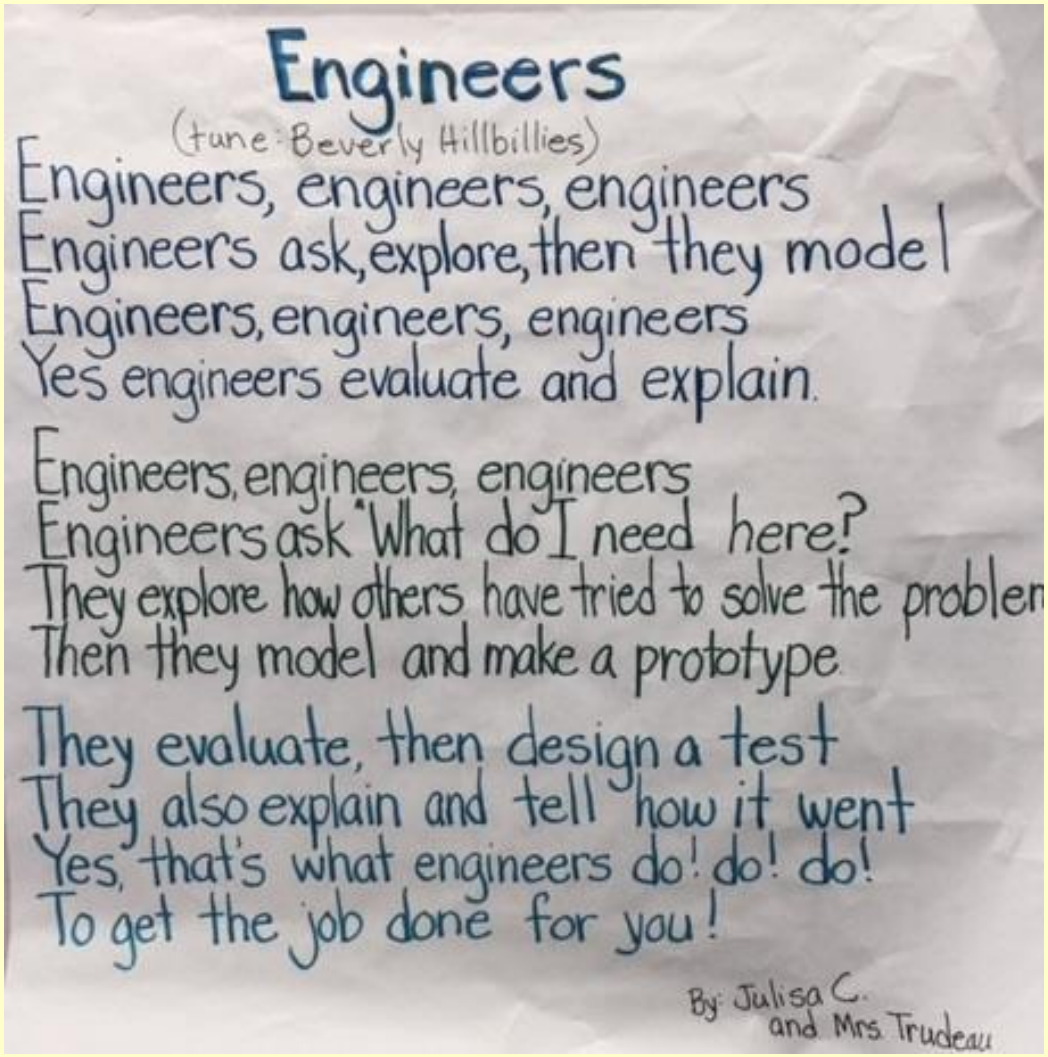
Tune Them Bones





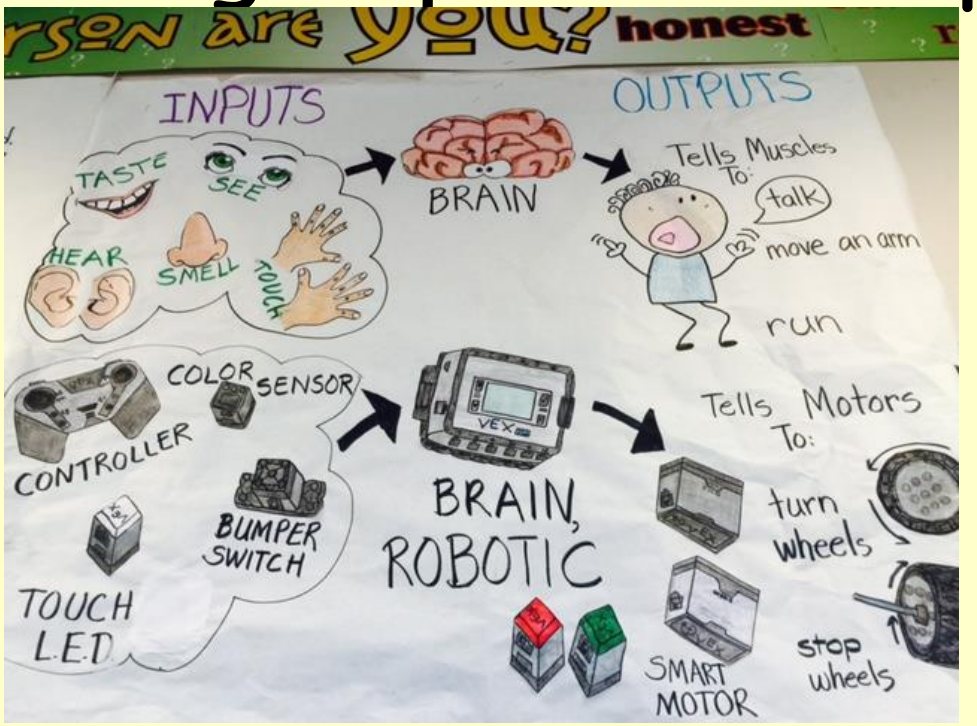
Engineers

- A Student Co Wrote
- Grade Level Pride
- Student / Hand Motions

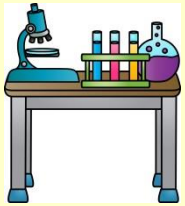


Pictorial Input Chart
Understanding Inputs & Outputs

Developing a Visual Understanding

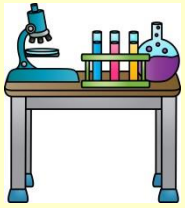




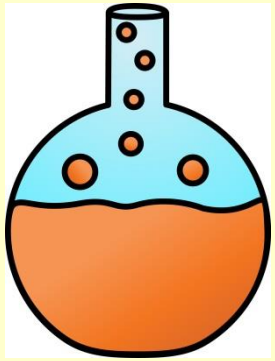

Evaluating Engineering Design

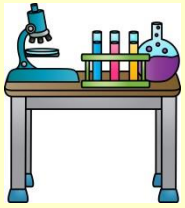
- Student Solve Real Life Problem



2015-2016 Modules

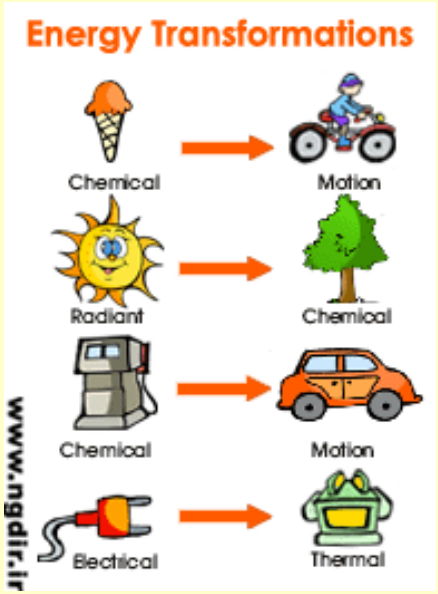
- **Infection: Detection**
- **Infection: Modeling and Simulation**



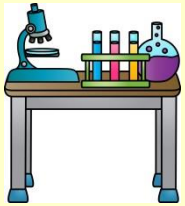


4th Grade

- Modules
  - Collisions
  - Conversions






Transfer of ENERGY

conduction

radiate

transfer

echo

absorb

Heat Transfer

gas

radiate

conduction

heat travels through solid material

Light Tran

heat

radiates

Sun

light

Earth

mirror

reflect

Electricity Transfers

Sound Transfer

absorb

echo

absorb

Motion Transfer

kinetic energy

moves

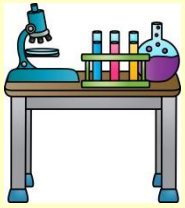
potential energy

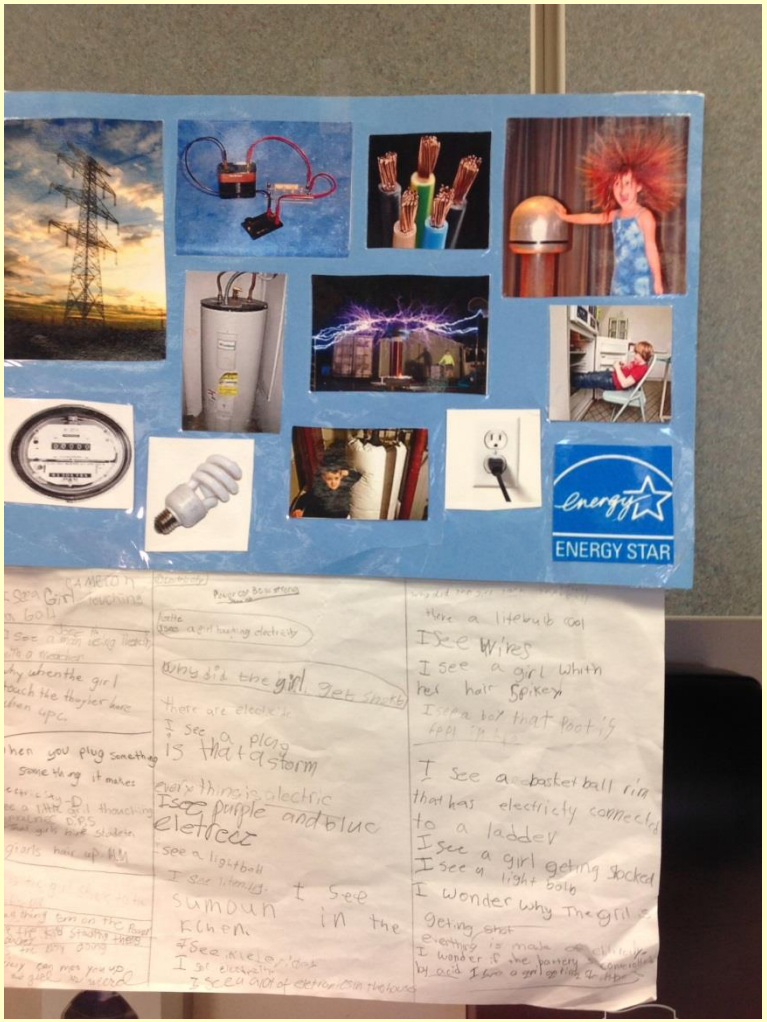
could

TV

Observation Chart

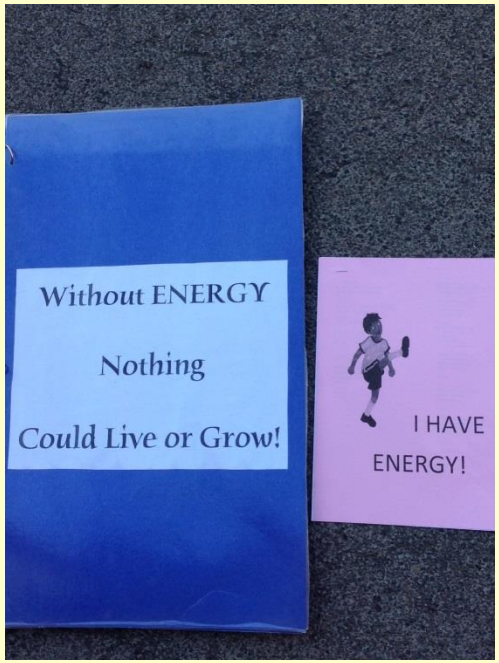
- Ask Question
- Make A Statement
- Draw A Picture



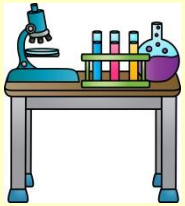


Big Books

- High Academic Language
- Intro Vocabulary

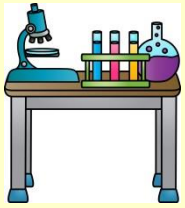





Collisions

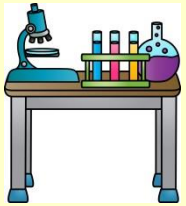
Auto Desk Publisher



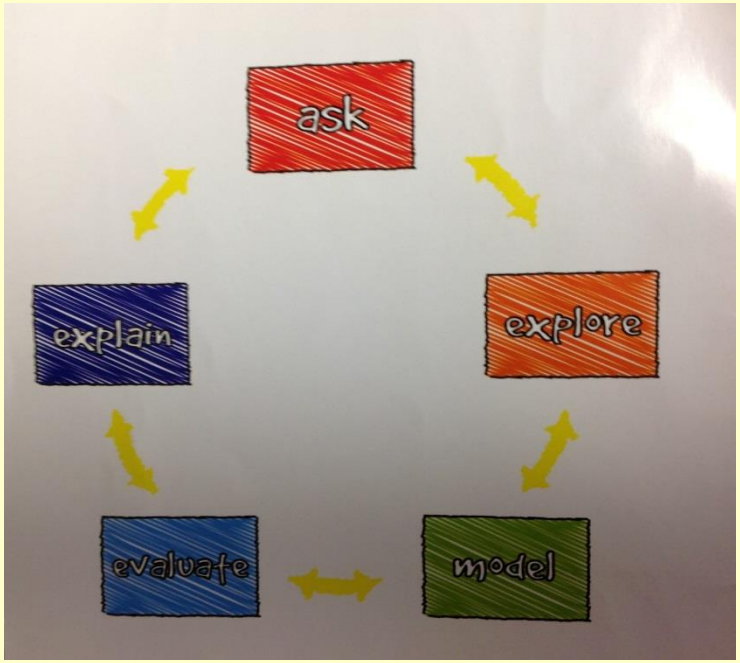
Simple Machines

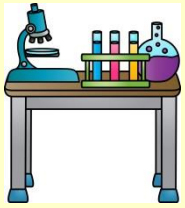
- Review
- Front Loading

Student Collision Testing

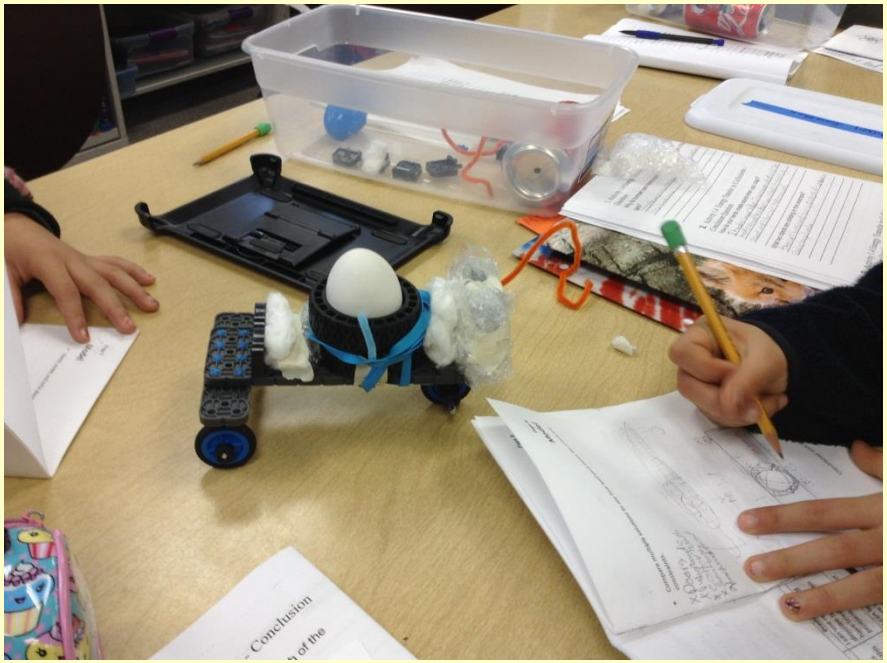


Engineering Design Process



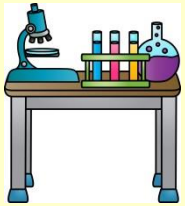


Collisions Final Project



- Materials Triads

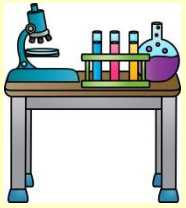


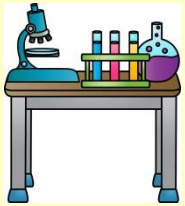

Collisions

- Real Life Problem
- Design Challenge
- Engineering Design Process
- Child Restraint System

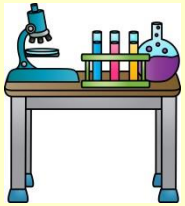


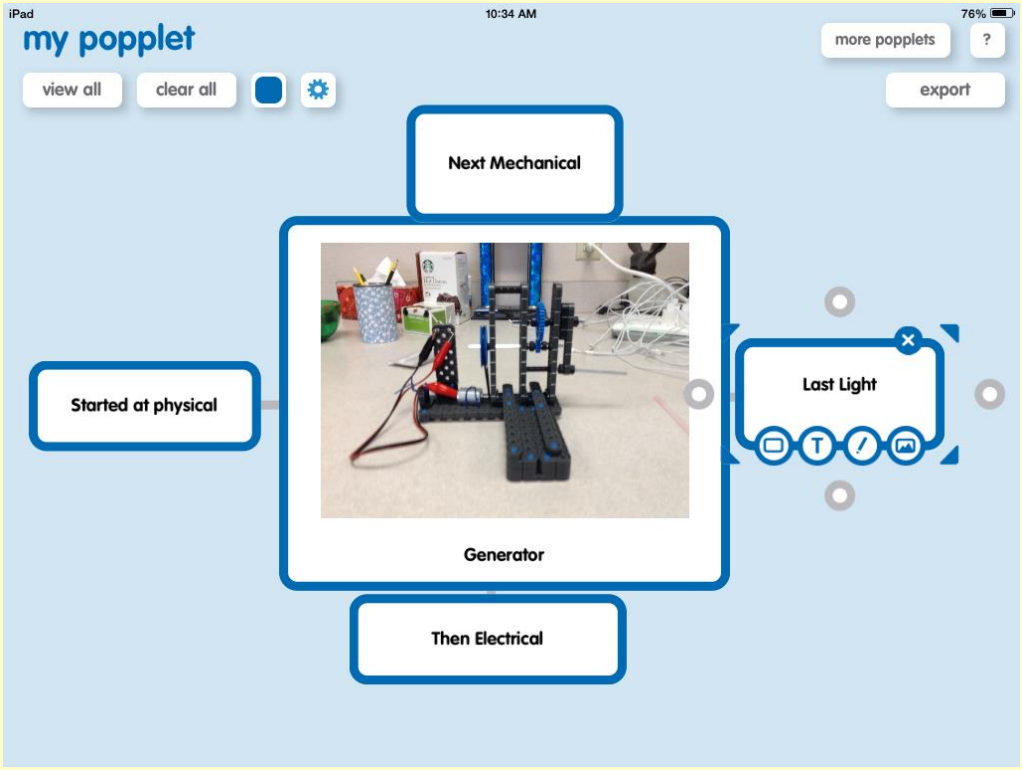

Collision Team Project



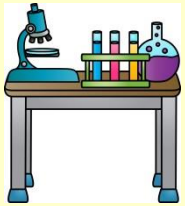
Collisions Final Project



Module 2 Conversions

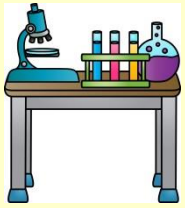





Conversions Planning

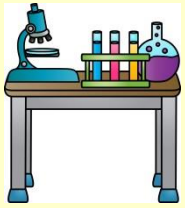


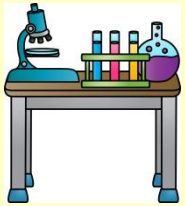

Conversions

- Real Life Problem



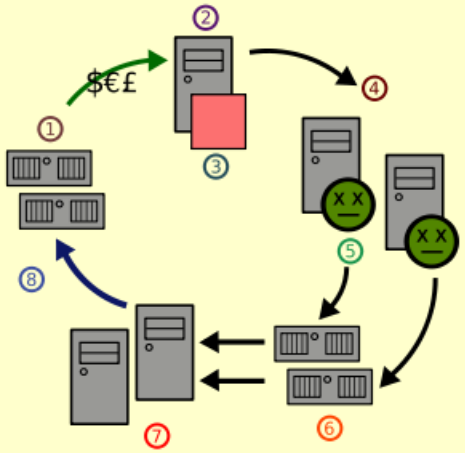




Conversions

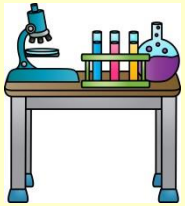


4th Grade 2015-2016 Upcoming Modules to GLADifying

- Input/Output: Computer Systems
- Input/Output: Human Brain

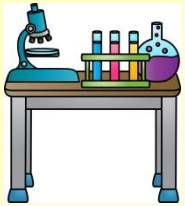




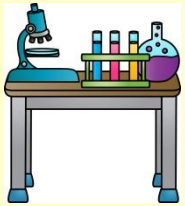

3rd Grade Modules

- **Stability and Motion: Science of Flight**
- **Stability and Motion: Forces and Interaction**



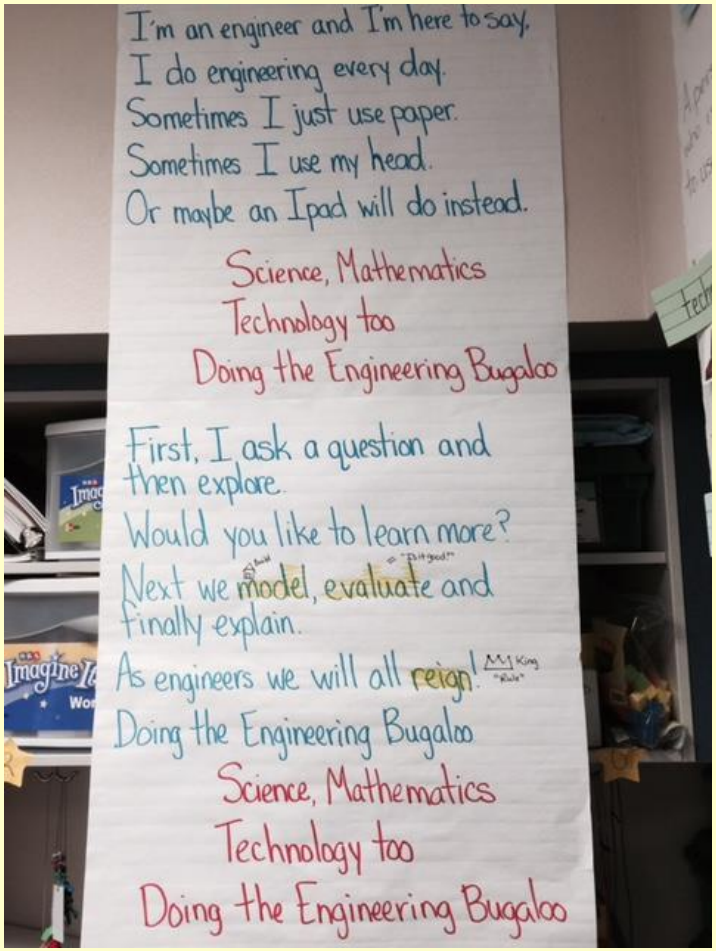
3rd Grade

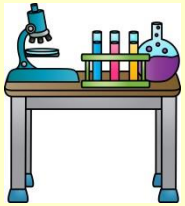
- Module
- Science in Flight



Chant

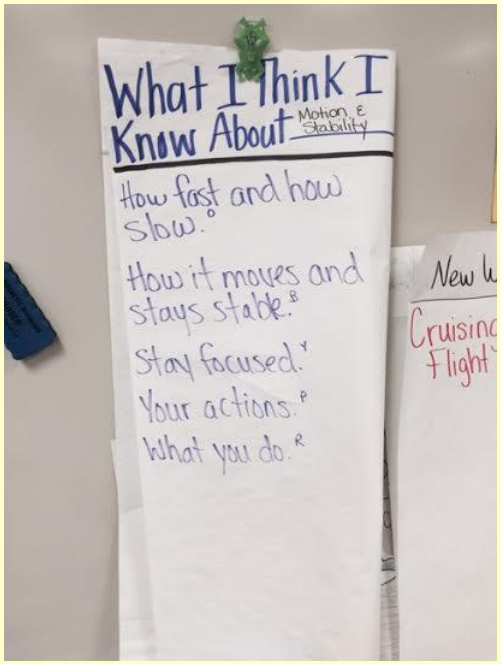
- Introduce Vocab
- Review
- Process

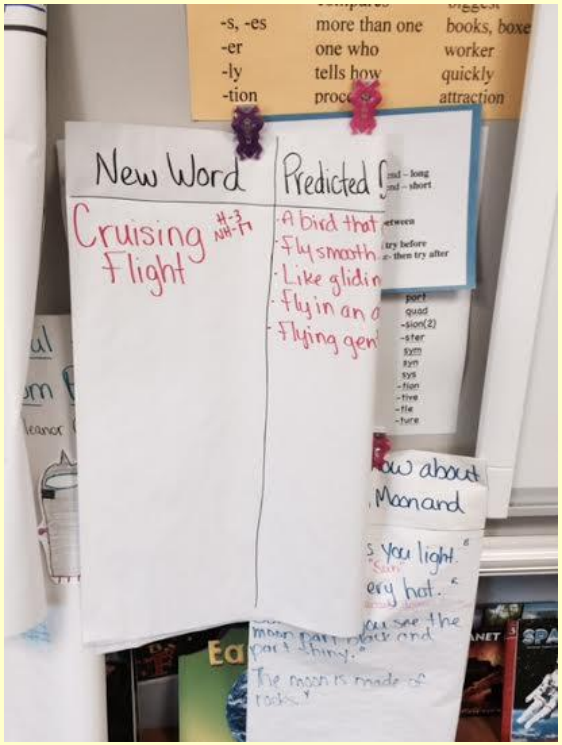




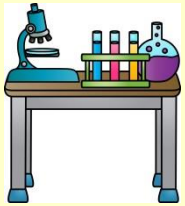
Inquiry

Assessing
Student Needs



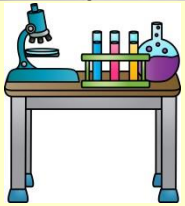


Building Vocab



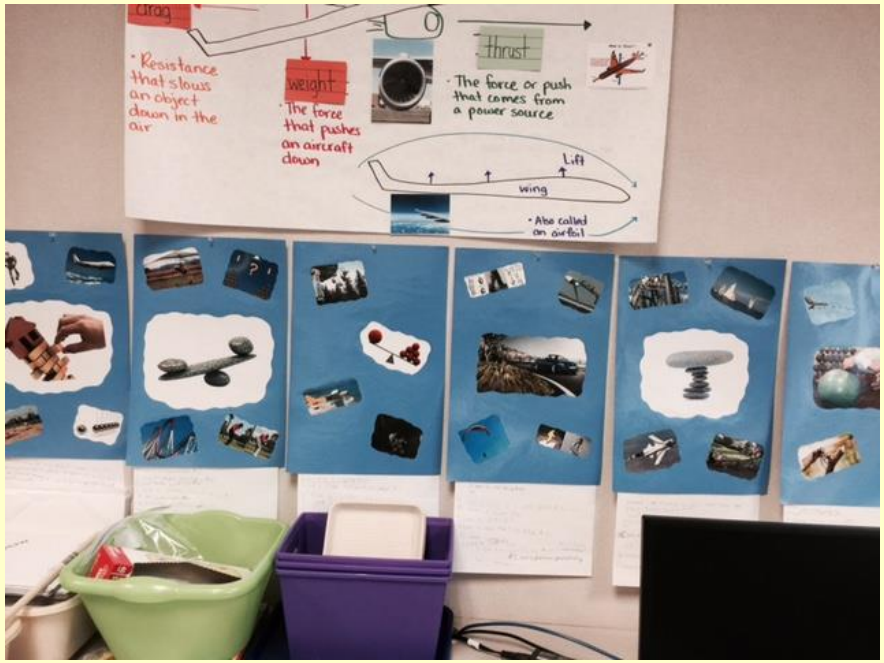
Cognitive Content Dictionary

New Word	Predicted Definition	Final Meaning	Oral Sentence
Prototype A-20 NA-10	· type of something · repeated thing · something to build	A working model that can be tested and evaluated. "working model"	✓✓✓ ✓✓
Force A-6 NA-11	· motion and stability V08 · US army - force E	A push or pull that can make an object move, stop moving or change directions. push or pull	✓✓✓ ✓✓
Gravity H-18 NH-2	· pulls everything R · something that floats P · In space no gravity V there. · The thing that keeps us on the floor E · A special force of weight	A force that pulls two objects toward one another. pulls together	✓✓✓ ✓✓

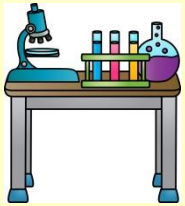


Stability & Motion

Balanced and
Unbalanced Forces
Front Loading

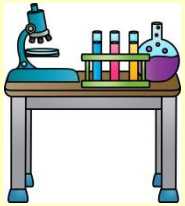




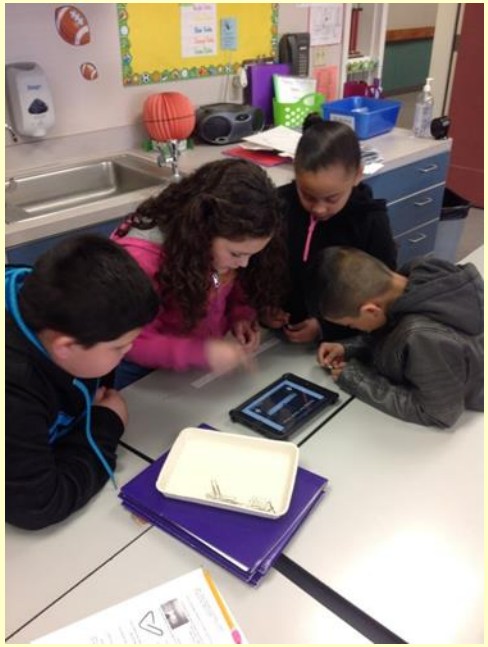



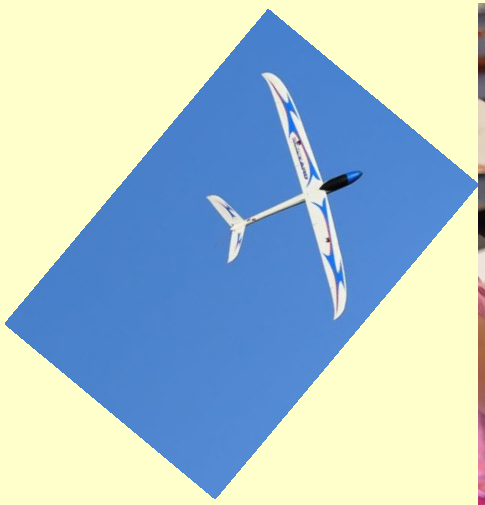

Team Tasks

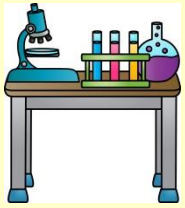
- Heads Together
- Building Background Knowledge
- Balanced/Unbalance
- Watch Video
- Use New Language



Begin Designing Glider

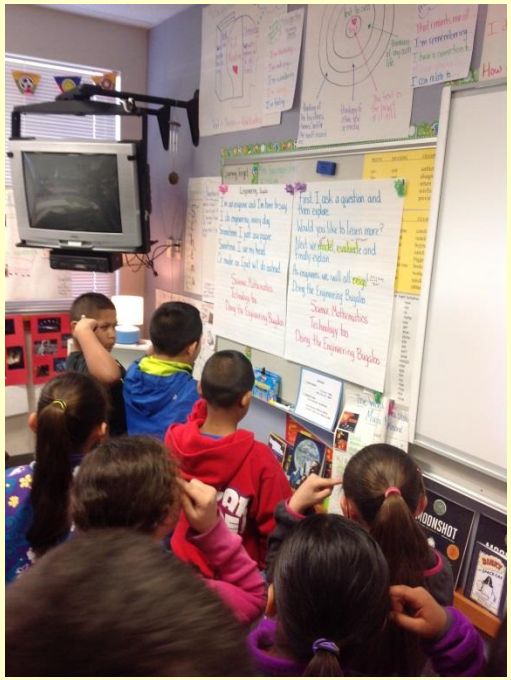


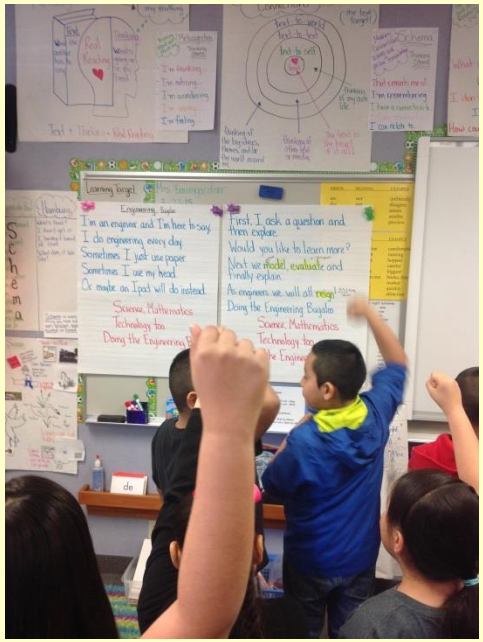


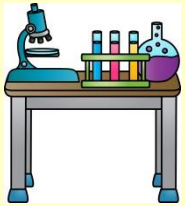


Engineering Bugalou

- Chants

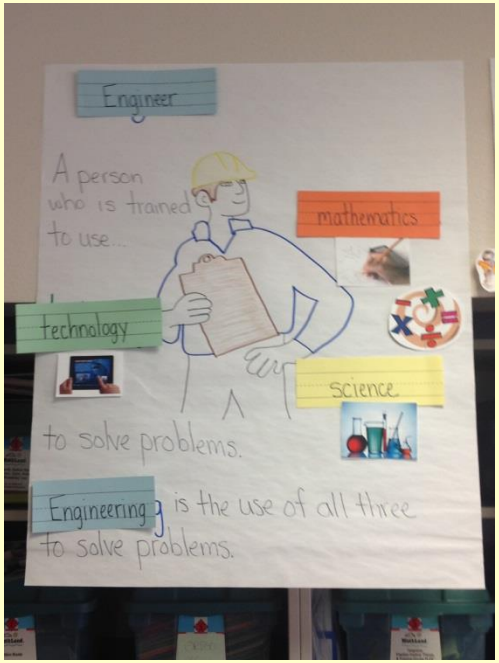


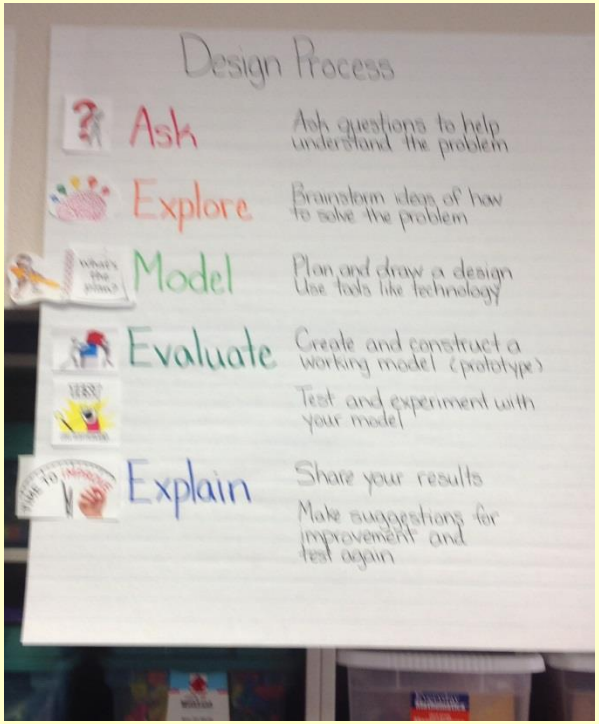




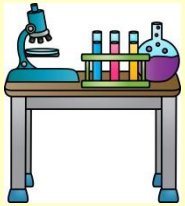
Pictorial Input

- Anchor Charts
- Living Walls



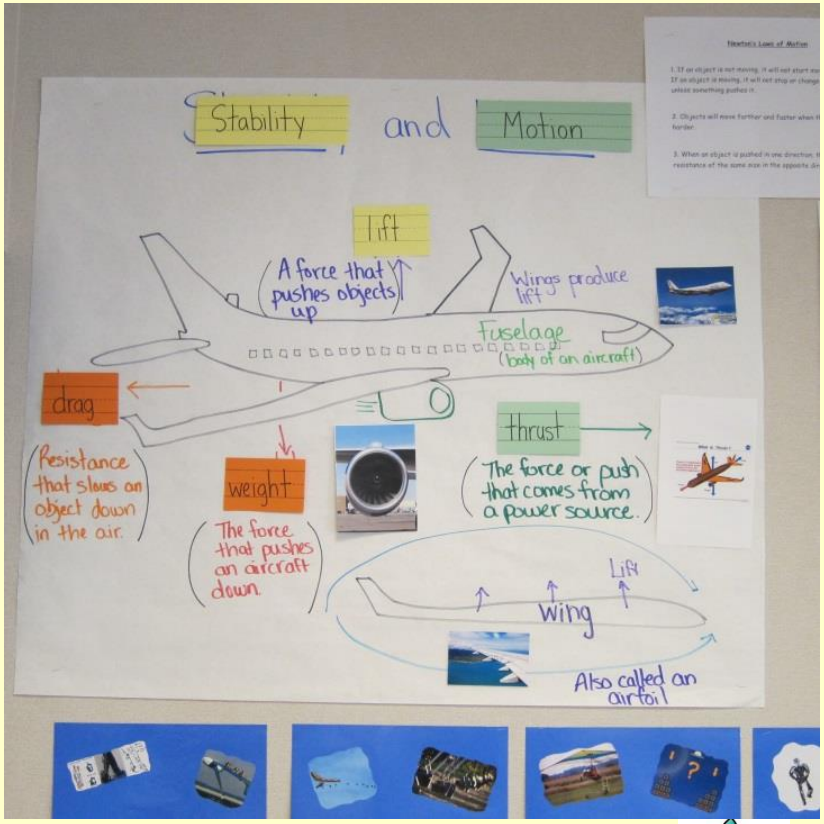




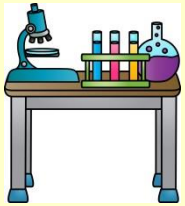




Pictorial Input Charts

- High Vocab
- Visual
- Review






3rd Grade 2015-2016 Upcoming Modules to GLADifying

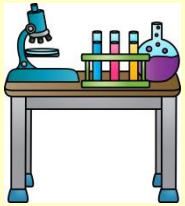
Variation of Traits

Students investigate the differences between inherited genetic traits and traits that are learned or influenced by the environment. Students explore the phenomena that offspring may express different traits than parents as they learn about dominant and recessive genes. Students use what they learn to predict inheritance patterns of plants through multiple generations and investigate how predicted outcomes compare to experimental results.

Programming Patterns

Students begin to move beyond basic sequential computer programs to discover the power of modularity and abstraction. Starting with computer-free activities and progressing to programming in a blocks-based language on a tablet, students learn how to think
computationally about a problem. They gain appreciation for the powerful computing practice of reducing programmatic solutions so they are generic enough to be reused in a variety of specific circumstances. Building on this transformational way of thinking, students create a final program using modular functions and branching logic.

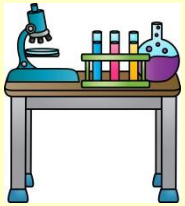



2nd Grade Modules

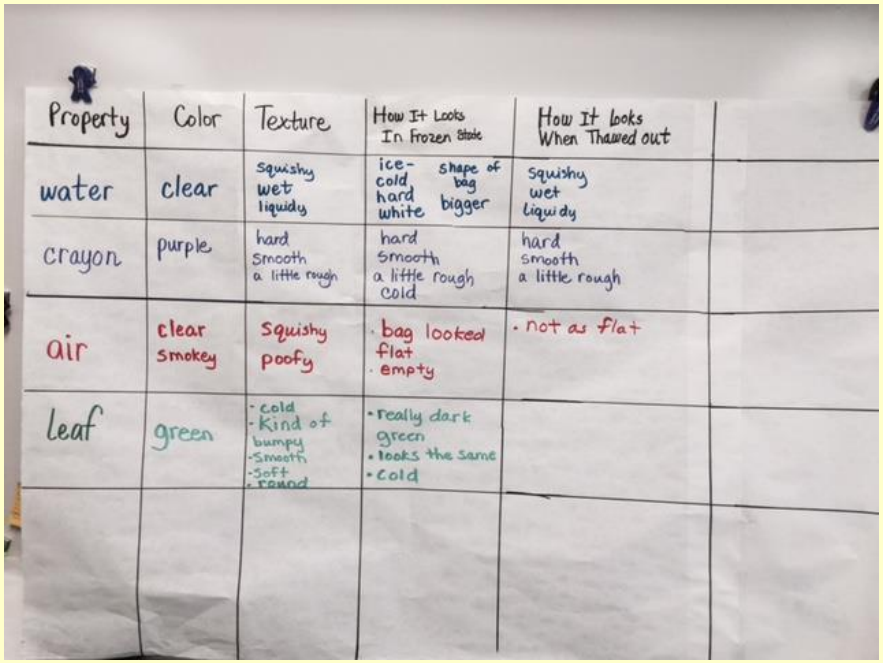
- **Materials Science: Properties of Matter**
- **Materials Science: Form and Function**



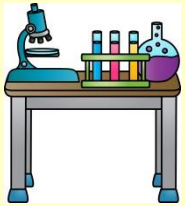

Process Grid

- Planning
- Starting Point
- End Results

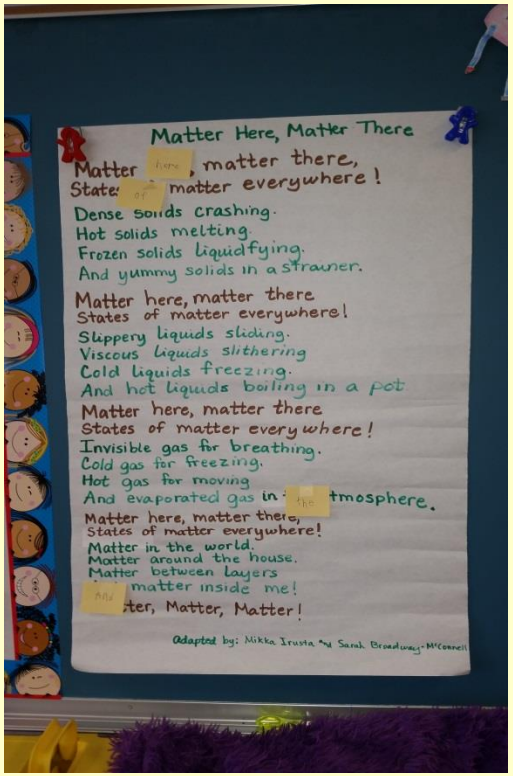


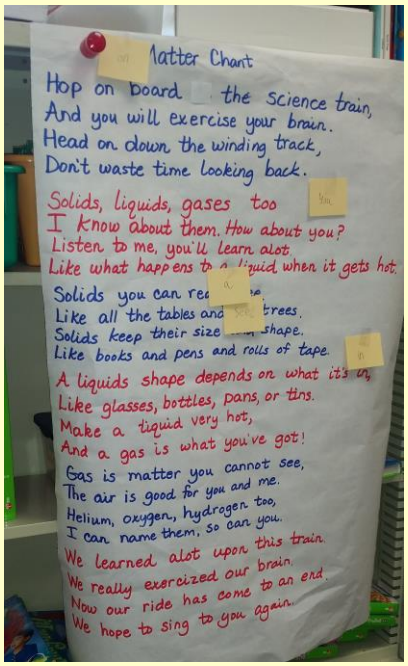
Property	Color	Texture	How It Looks In Frozen State	How It looks When Thawed out
water	clear	Squishy wet liquidy	ice- cold hard white shape of bag bigger	Squishy wet liquidy
crayon	purple	hard Smooth a little rough	hard smooth a little rough cold	hard smooth a little rough
air	clear smokey	Squishy poofy	· bag looked flat · empty	· not as flat
leaf	green	· cold · Kind of bumpy · Smooth · Soft · round	· really dark green · looks the same · cold	

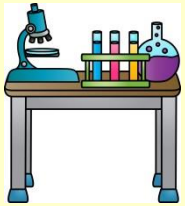


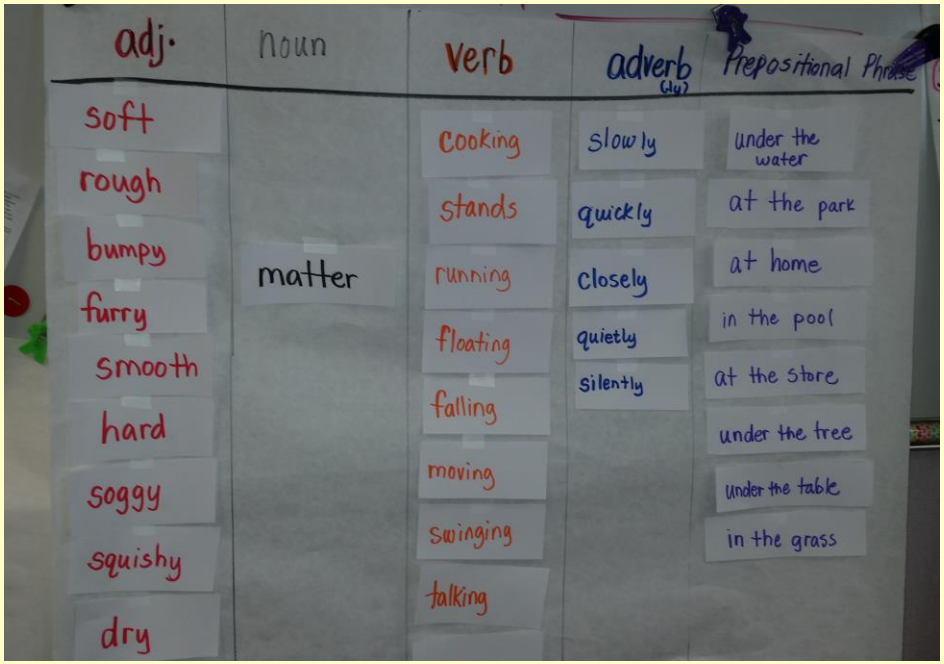

Chants Build Vocabulary



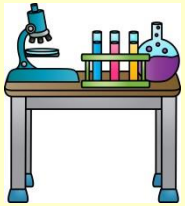




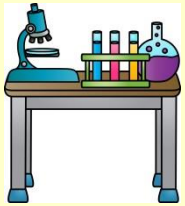
Sentence Pattern Charts





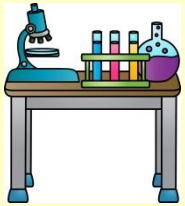

Observations



High Academic Language

Low Affective Filter

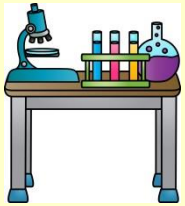


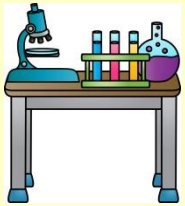

Team Tasks/ Heads Together

Discussing Design



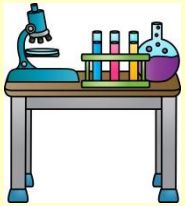




Turn and Talk



Team Tasks

"They Do"



Testing Team Design

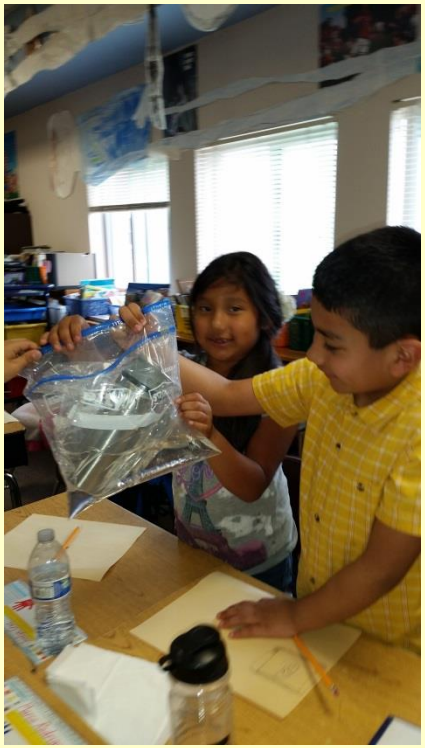
Solving Real
Time Problem

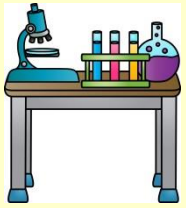






More Design Testing

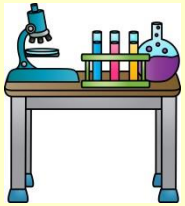




2nd Grade 2015-2016 Upcoming Modules to GLADifying

- **The Changing Earth**
- **Grids and Games**

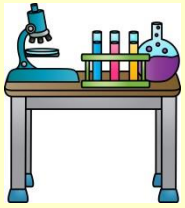


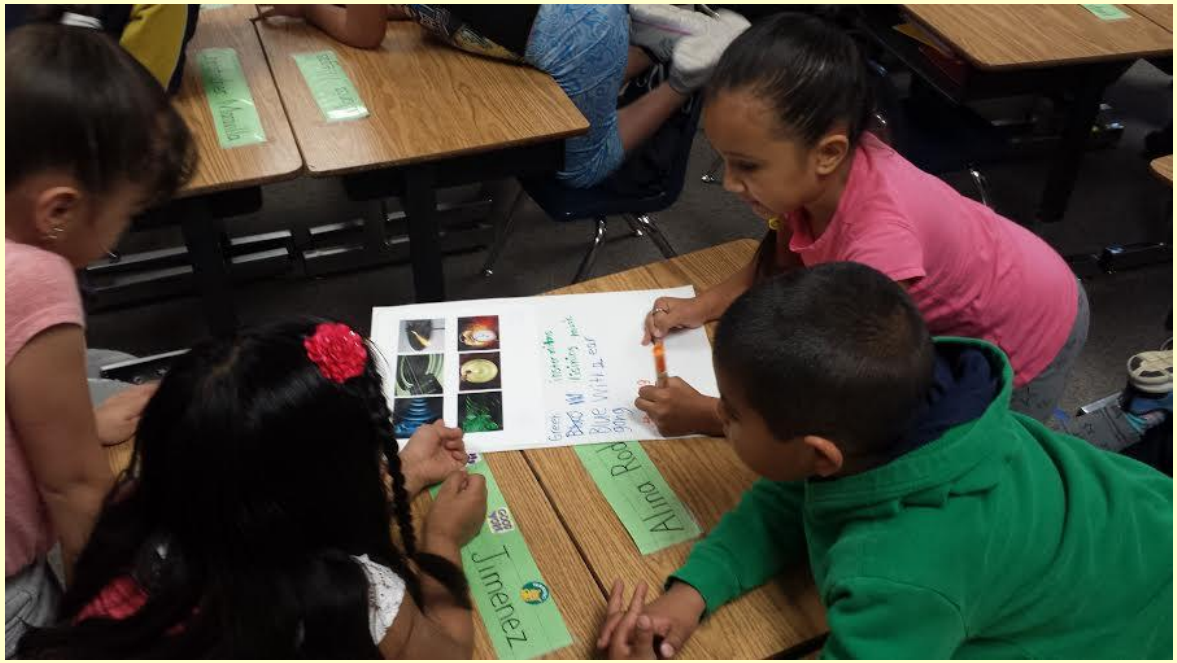

1st Grade Modules

- **Light and Sound**
- **Light: Observing the Sun, Moon, and Stars**

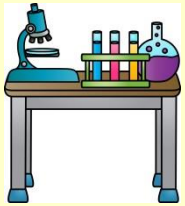


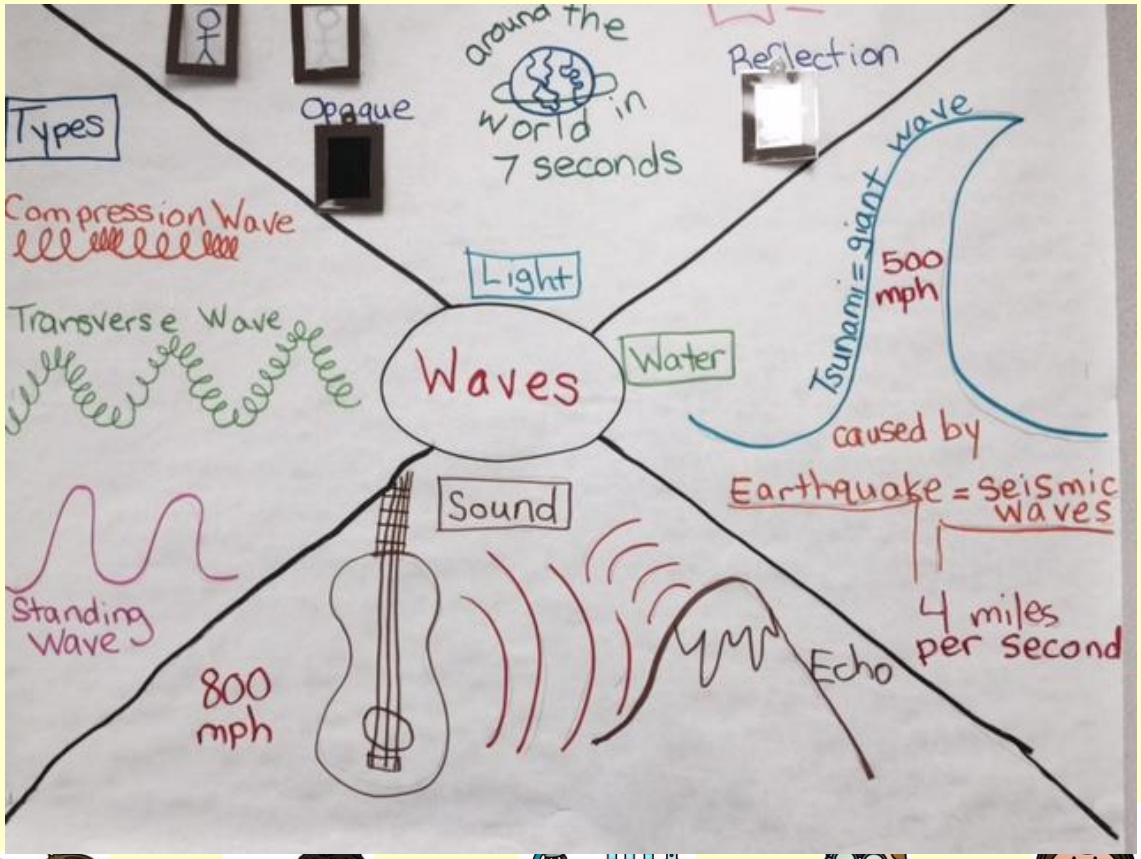

Observation Charts






Pictorial Input

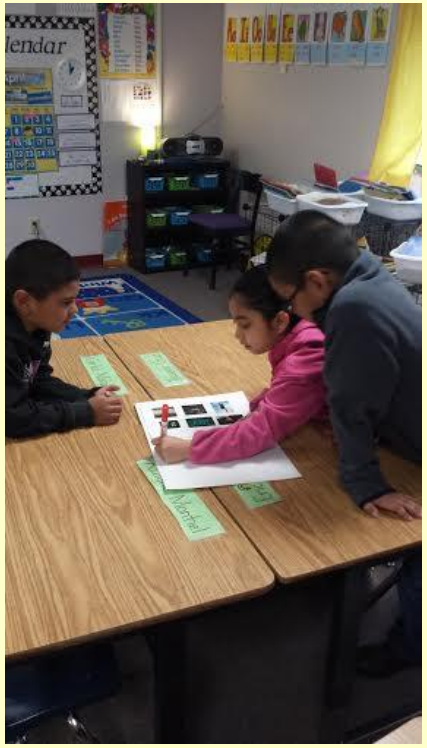


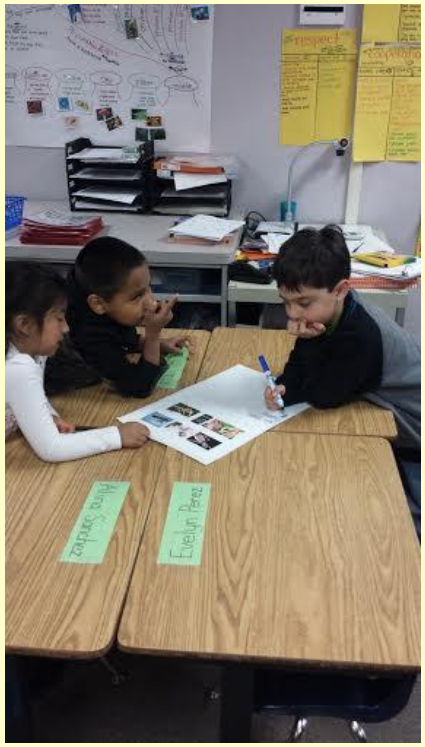


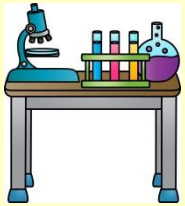




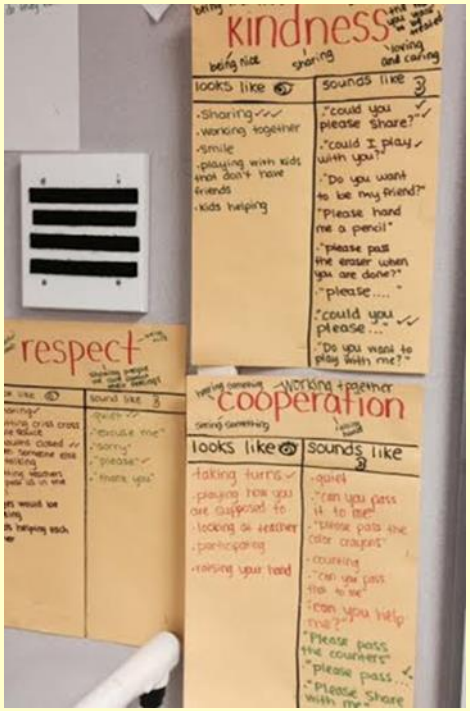
"They Do"

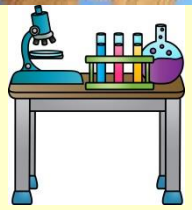




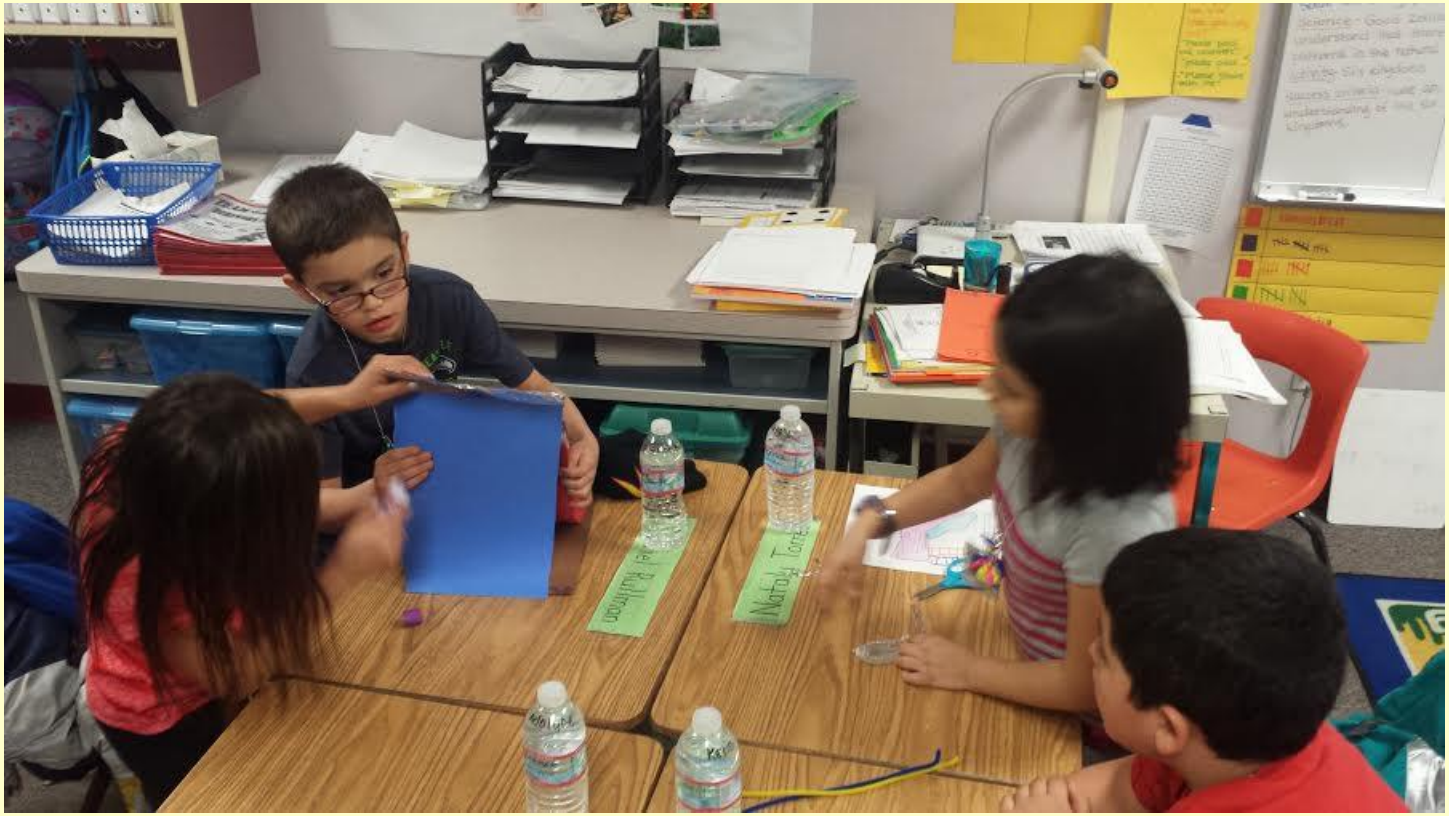


Team Tasks

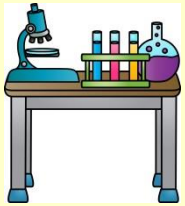

kindness
looks like
sounds like
•Sharing
•working together
•smile
•playing with kids that don't have friends
•kids helping
"could you please share?"
"could I play with you?"
"Do you want to be my friend?"
"Please hand me a pencil"
"please pass the eraser when you are done?"
"please...."
"could you please..."
"Do you want to play with me?"
respect
cooperation
looks like
sounds like
taking turns
raising your hand
quiet
"can you pass it to me"
"please pass the color crayons"
counting
"can you help me?"
"Please pass the counters"
"please pass..."
"Please share



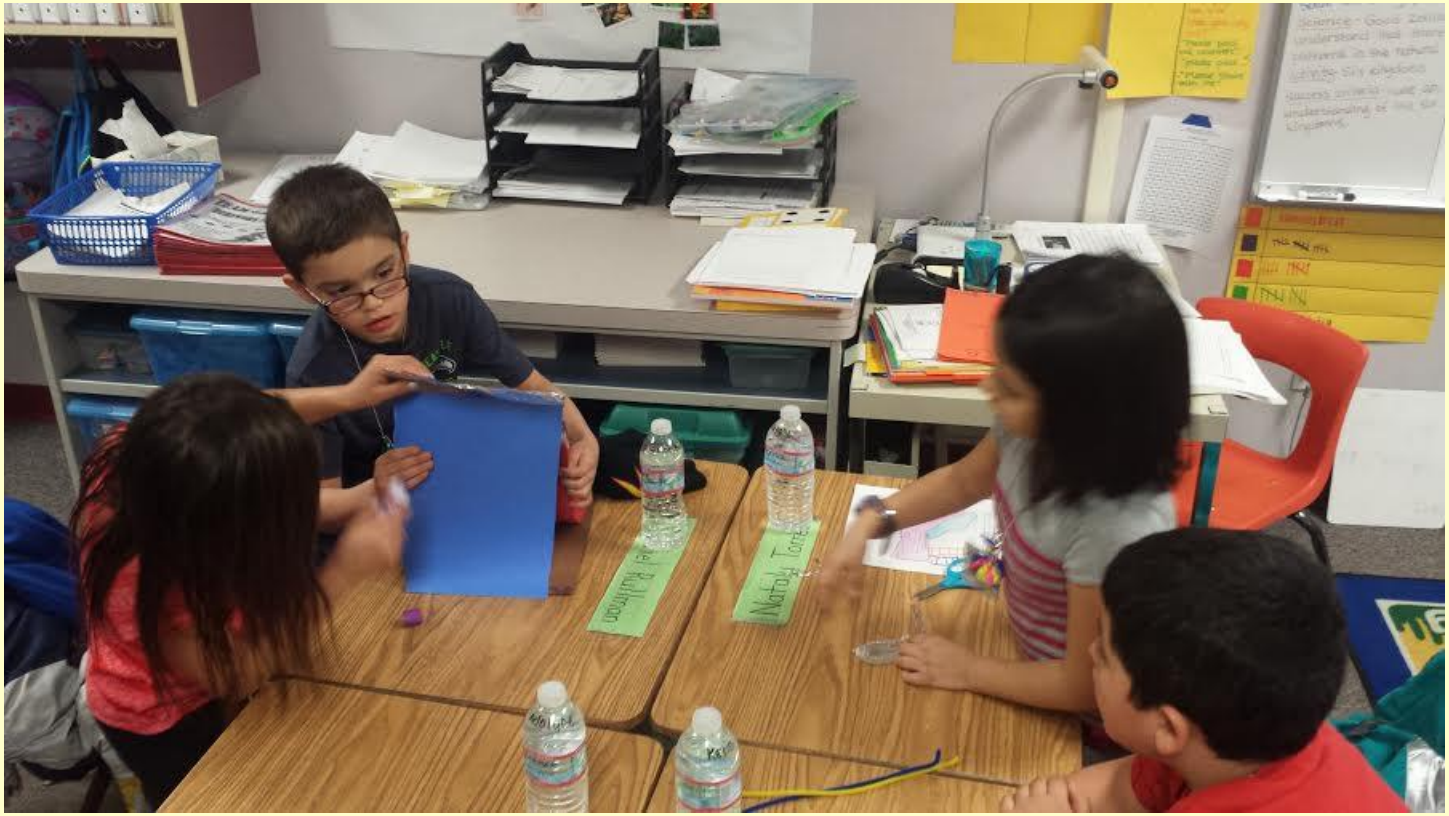
Team Tasks

- 

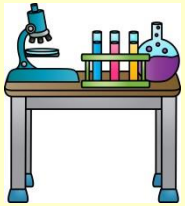


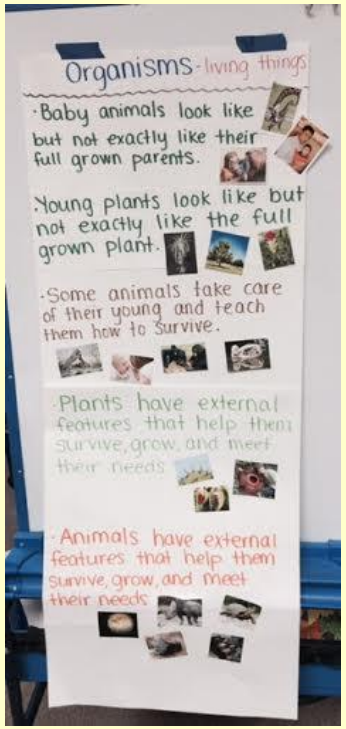

Team Support

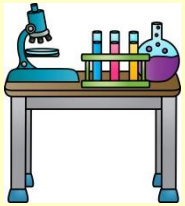
- 




Powerful Tool Pictorial Inputs

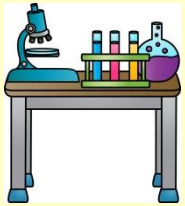




1st Grade 2015-2016 Upcoming Modules to GLADifying

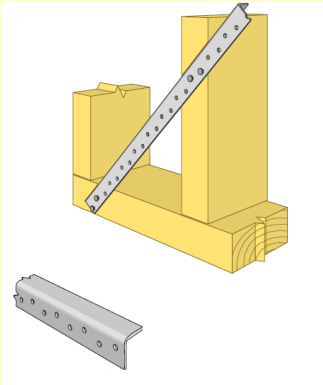
- **Animal Adaptations**
- **Animated Storytelling**



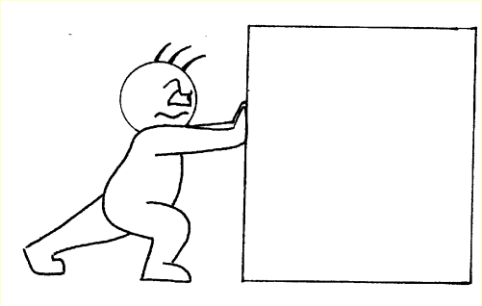




Kindergarten

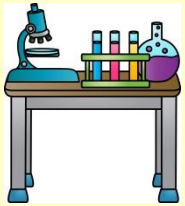
- Structure and Function:
  The Design Process



- Structure and Function:
  Force and Motion

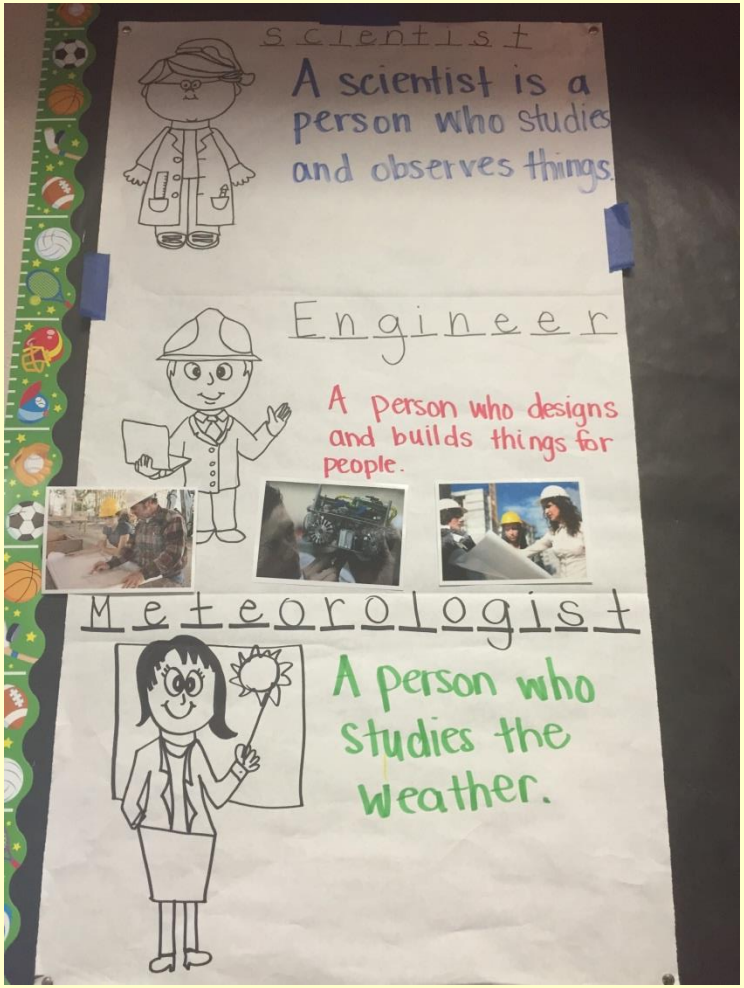




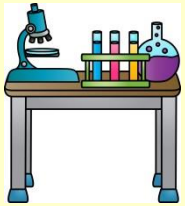



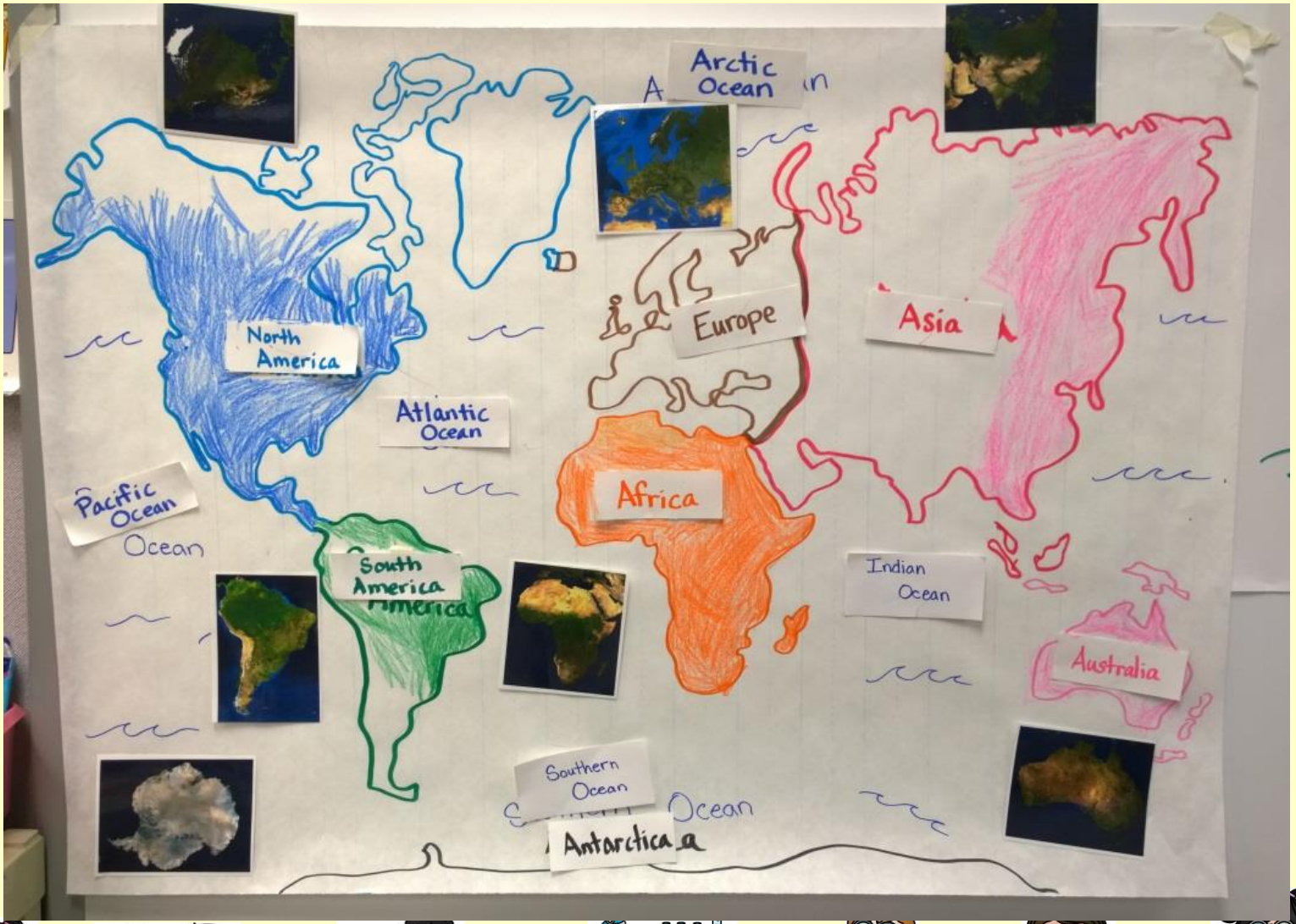

Front Loading

- First school experience
- New kindergarten topics
- Leveled book availability







Arctic Ocean
North America
Europe
Asia
Atlantic Ocean
Pacific Ocean
Africa
South America
Indian Ocean
Australia
Southern Ocean
Antarctica



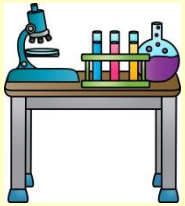




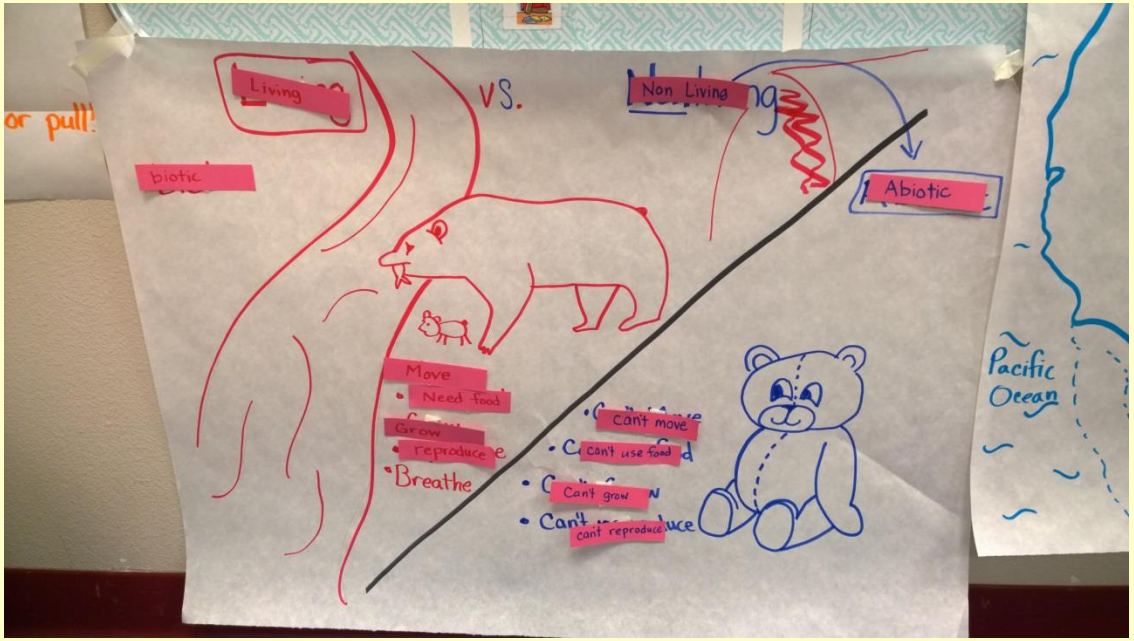
Sentence Patterning Chart

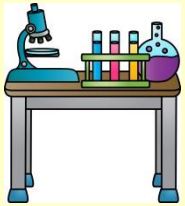
Adjective (describe)	Noun (what)	Verb (show)	Prepositional phase (where)
tall	Structures	Stand	in the city.
hard		rise	at the desert.
gigantic		tower	in our classroom.
strong		protect	in the country.
large		warms	in Toppenish.
solid		grows	in differnt states.



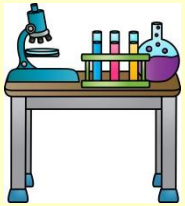




Comparative Input Chart





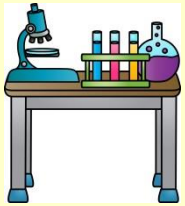
Pictorial Input Chart



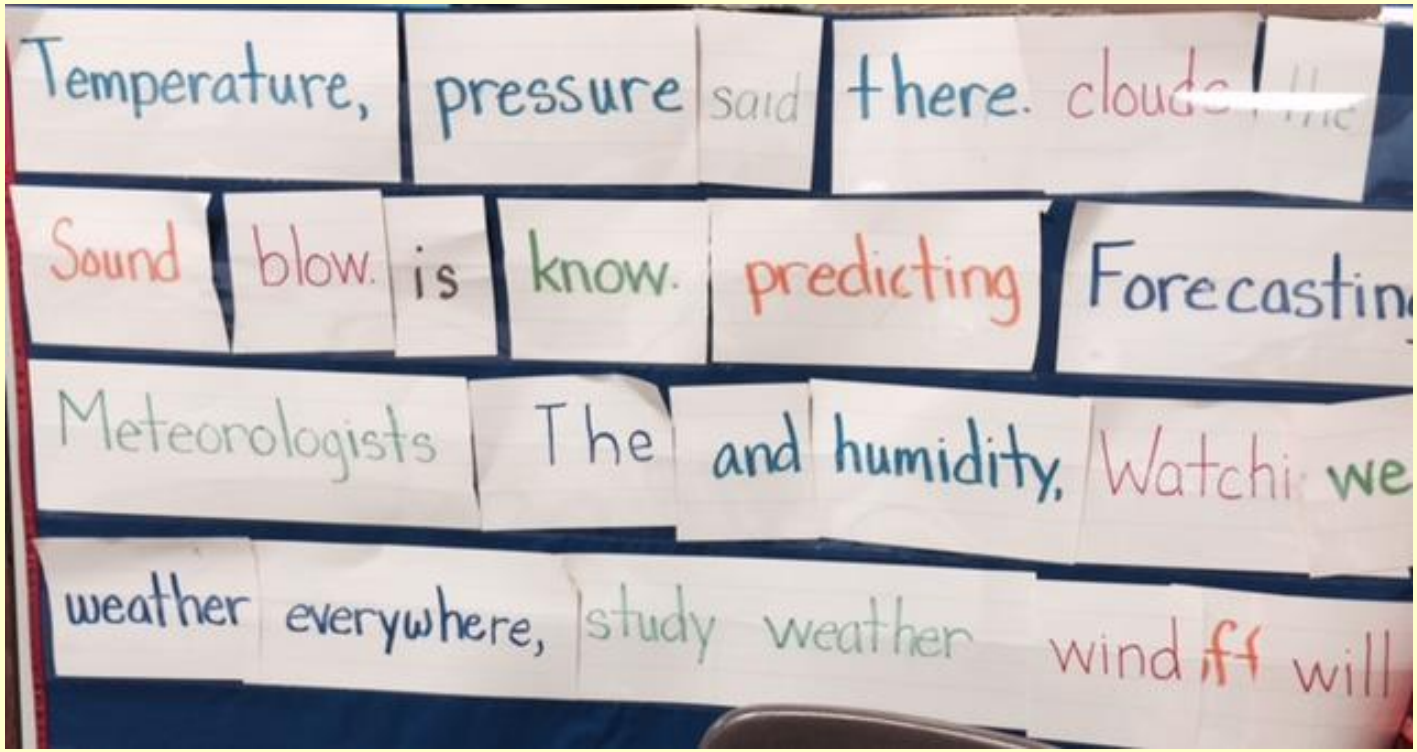
Team Tasks

- Language practice
- Writing practice
- Focus groups

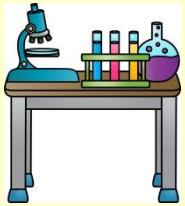


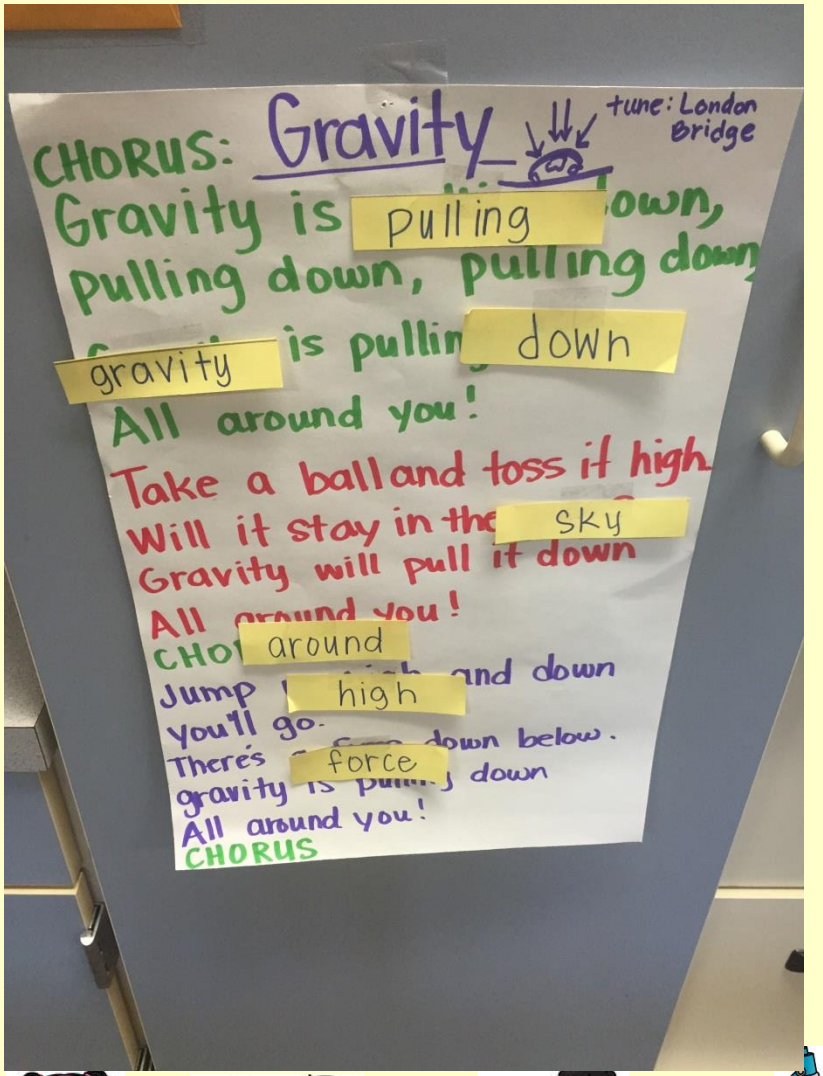




Found Poetry





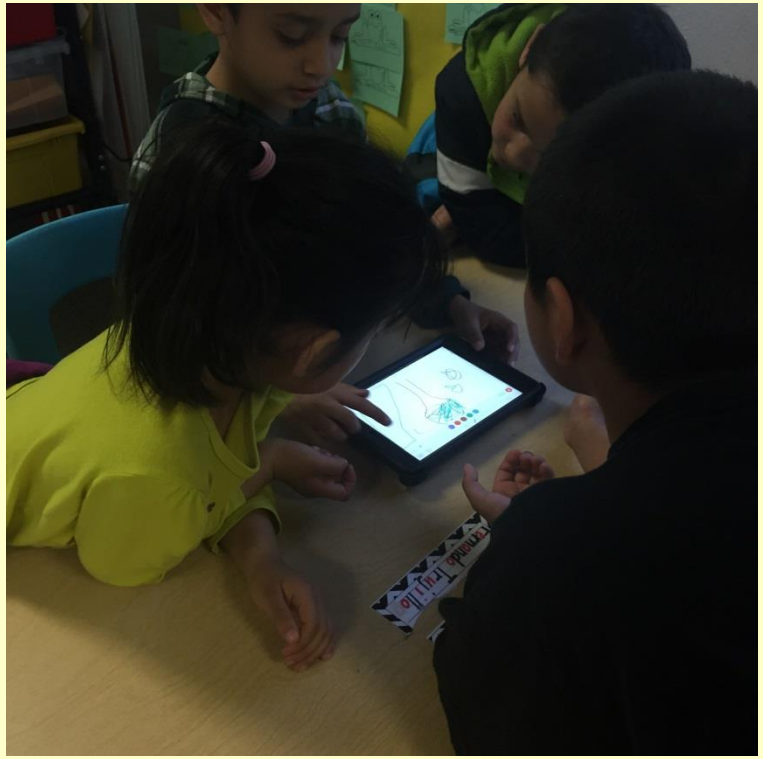





CHORUS: Gravity
tune: London Bridge
Gravity is pulling down,
Pulling down, pulling down
gravity is pulling down
All around you!
Take a ball and toss it high
Will it stay in the sky
Gravity will pull it down
All around you!
around
high
force
All around you!
CHORUS

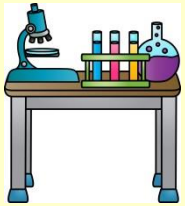
Chants

Using Educreations on iPads

- Recorded lessons
- Record thinking

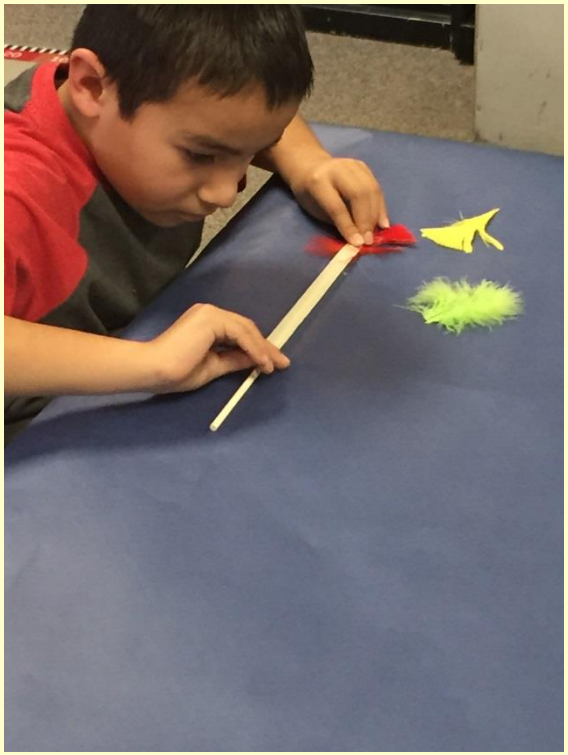


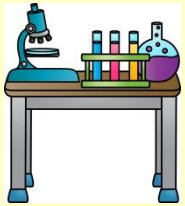



Designing Our Paintbrushes

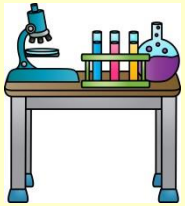
Real Life Problem
"I Do"





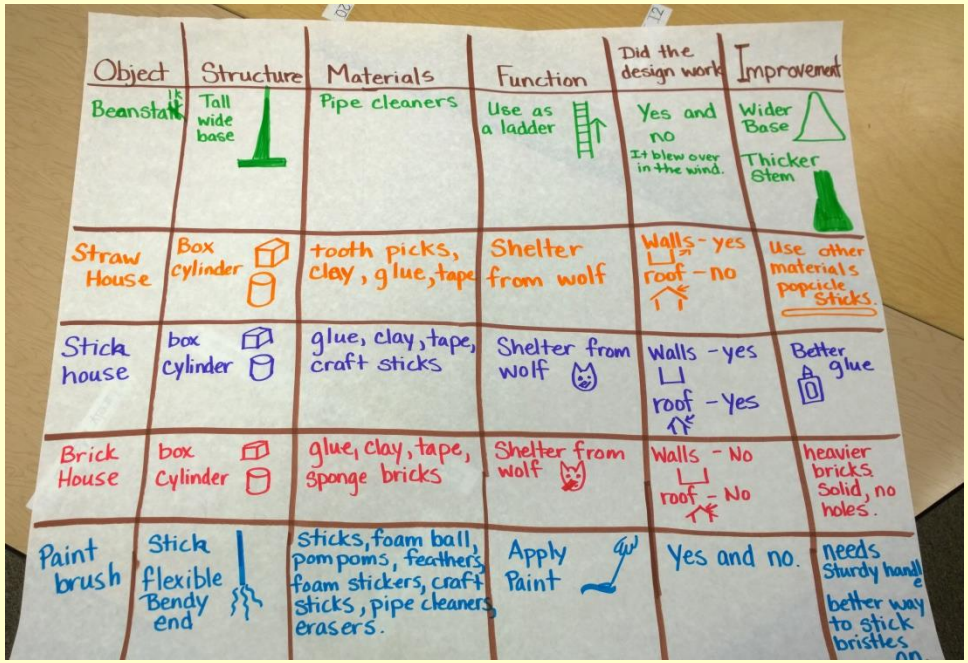
Evaluating Our Paintbrushes

Real Life Problem
"I Do"



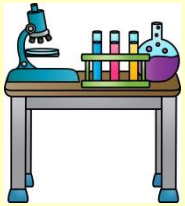
Planning Process Grid

What do you want them to learn?



Object	Structure	Materials	Function	Did the design work	Improvement
Beanstalk	Tall wide base	Pipe cleaners	Use as a ladder	Yes and no. It blew over in the wind.	Wider Base. Thicker Stem
Straw House	Box cylinder	tooth picks, clay, glue, tape	Shelter from wolf	Walls - yes. roof - no	Use other materials popcicle Sticks.
Stick house	box cylinder	glue, clay, tape, craft sticks	Shelter from wolf	Walls - yes. roof - Yes	Better glue
Brick House	box cylinder	glue, clay, tape, sponge bricks	Shelter from wolf	Walls - No. roof - No	heavier bricks. Solid, no holes.
Paint brush	Stick. flexible Bendy end	Sticks, foam ball, pompoms, feathers, foam stickers, craft sticks, pipe cleaners, erasers.	Apply Paint	Yes and no.	needs Sturdy handle. better way to stick bristles on




Backward Planning

Living Document

Kindergarten - Garfield 1

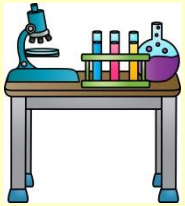
UNITS	ALL ABOUT ME	SCHOOL ENVIRONMENT	WEATHER
TIMELINE	3 WEEKS	6 WEEKS	6 WEEKS
ESSENTIAL UNDERSTANDINGS	Students will understand the everyone is unique and that's ok.	Understand the purpose for rules. There are different rules and expectations in every setting. Learning Rules is important to function well in a setting.	Weather impacts humans no matter where you are. People can design and create structures to lessen the impact of weather. Weather conditions occus in patterns over time.
SOCIAL STUDIES & SCIENCE STANDARDS	SOCIAL STUDIES	SOCIAL STUDIES	SCIENCE
	4.1.1 understands and creates timelines to show personal events in a sequential manner.	1.1.1 Understand the key ideas of justice and fairness in the context of the classroom.	K-ESS2-1 Use and share observations of local weather conditions to describe patterns over time.
	5.1.1 Undersands ones point of view.	1.1.2 Applies the ideals of justice and fairness when making choices or decisions in the classroom or on the playground.	K-PS3-1 Make observations to determine the effect of sunlight on Earth's surface.
	5.3.1 States own view points and listens to view points of others	1.2.1 Remembers who the people are that make and impliment the rules in a school.	K-PS3-2 Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.
	5.4.1 Retells and explains personal history.	5.1.2 Evaluates the fairness of ones point of view	K-ESS3-2 Ask questions to obtain information about the purpose of weather forcasting to prepare for, and respond to, severe weather.
		5.2.1 Understands how to ask questions about the school community and classroom.	
READING STRATEGIES (Matched to CCSS)	Schema	RL.K.7 Making Connections	Predicting
	Visualization	RL.K.1 & RL.K.4 Asking Questions	Confirming

G/S= Guidance and Support
P/S=Prompting and Support

D.D.W=Drawing, Dictation, and Writing

Lopez, Madden, Sanderson 3/31/2015




Kindergarten 2015-2016 Upcoming Units to GLADifying

- Bio-medicine:

  Human Body

- Computer Programing:

  Animals and Algorithms