



Falling for S.T.E.M.

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It's time for TAKE OFF!!!!!!



Where we were and where we are...

Criteria	S.T.E.M. Evaluation		
	2012	2013	2014
S.T.E.M. students	0	2	3
Non – traditional student participation in S.T.E.M.	0	2	3
Characteristics of the S.T.E.M. Curriculum	0	1	2-3
Teacher Certification	1	2	2-3
Teacher Professional Learning	0	1	2-3
Teacher Collaboration	0	1	2-3
Math & Science Instruction	0	1	2-3
Business, Community, and Post-Secondary Partnerships	0	0	2
S.T.E.M. Competitions	0	0	2
Performance Assessments	0	0	2-3
Math, Science, Technology, and Engineering Integration	0	1	2-3
S.T.E.M. Labs	0	1	2-3
Student Rigor & Relevance and Instructional Quality	0	1	2-3
Technology Integration	0	0	2-3
Accountability	0	1	2-3



How are we going to meet
the S.T.E.M. Certification
Requirements?

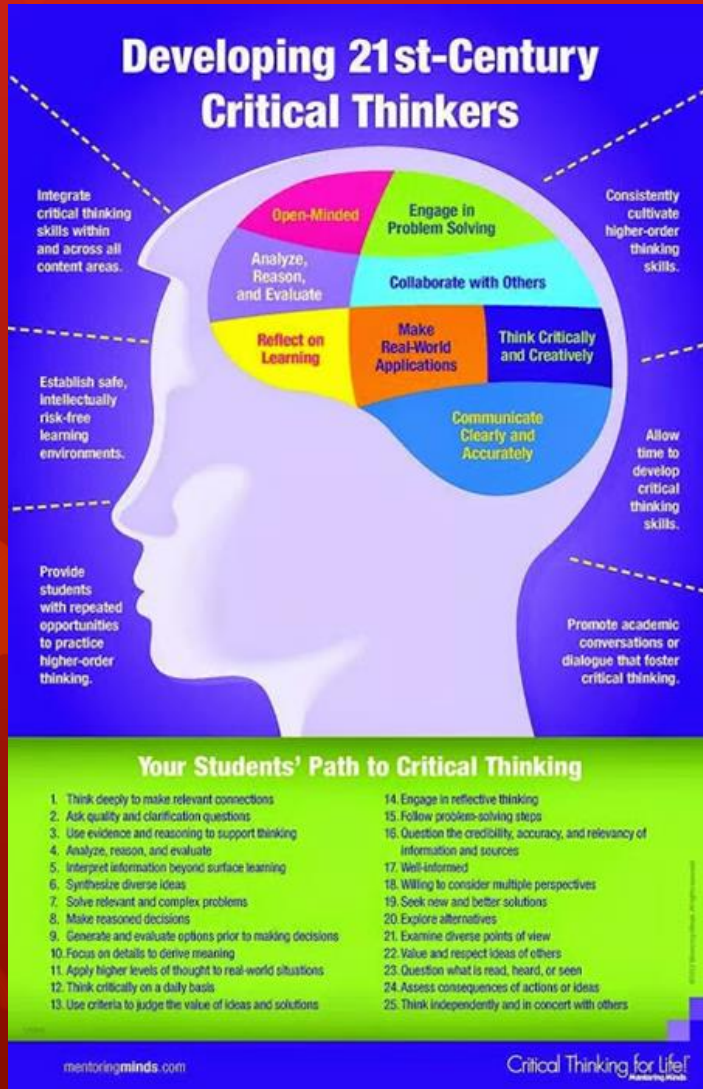
Classroom Set – Up Checklist

STEM Classroom Set Up Checklist



	Yes	No
1. Students are sitting in Collaborative groups		
2. Students Collaborate during the S:T.E.M. activity. <small>(Students demonstrate ability to discuss activities, debate, and argue points of view in an effective and respectful manner)</small>		
3. The Design Process is posted in the Classroom.		
4. Students understand and can articulate the Engineering Design Process as they work through their S:T.E.M. activity.		
5. Students and teacher understand their roles during S:T.E.M. activities. <small>(Students job = solve/create and Teachers job = monitor/feedback)</small>		
6. Work displayed outside Classrooms show artifacts of students work through the Engineering Design Process. <small>(Example: student work, presentations, pictures, interactive journals)</small>		
7. Students have S:T.E.M. interactive Journals for the Classroom and S:T.E.M. Lab <small>(A Journal can be used for both locations – students will need to take their journals with them every time they go to the lab)</small>		
8. Students are actively engaged.		
9. Use of technology – <ul style="list-style-type: none"> > Teachers use technology as a means to engage students in the learning by use of Flipcharts, build background knowledge, provide opportunities for students to do, and peer teaching (students teaching students). > Students – use a multitude of technologies to express depth of knowledge and understanding. 		

Why ?



Learning is focused on Critical Thinking:

Students are knowledgeable of the following:

- (1) What they are learning?
- (2) Why the learning is essential to their community and well being?
- (3) Can relate what they are learning to a profession ?
- (4) Can apply the skills verbally, written, and through application?

Why?

The Learner Relationship

What Teachers Prepare

- **Content**
--Access
- **Process**
--Sense-making
- **Product/
Learning Artifacts**
--Evidence



How Students Engage

- **Readiness**
--Current Skill Level
- **Interests**
--Choices and
Backgrounds
- **Learning Profile**
--Brain Intelligences

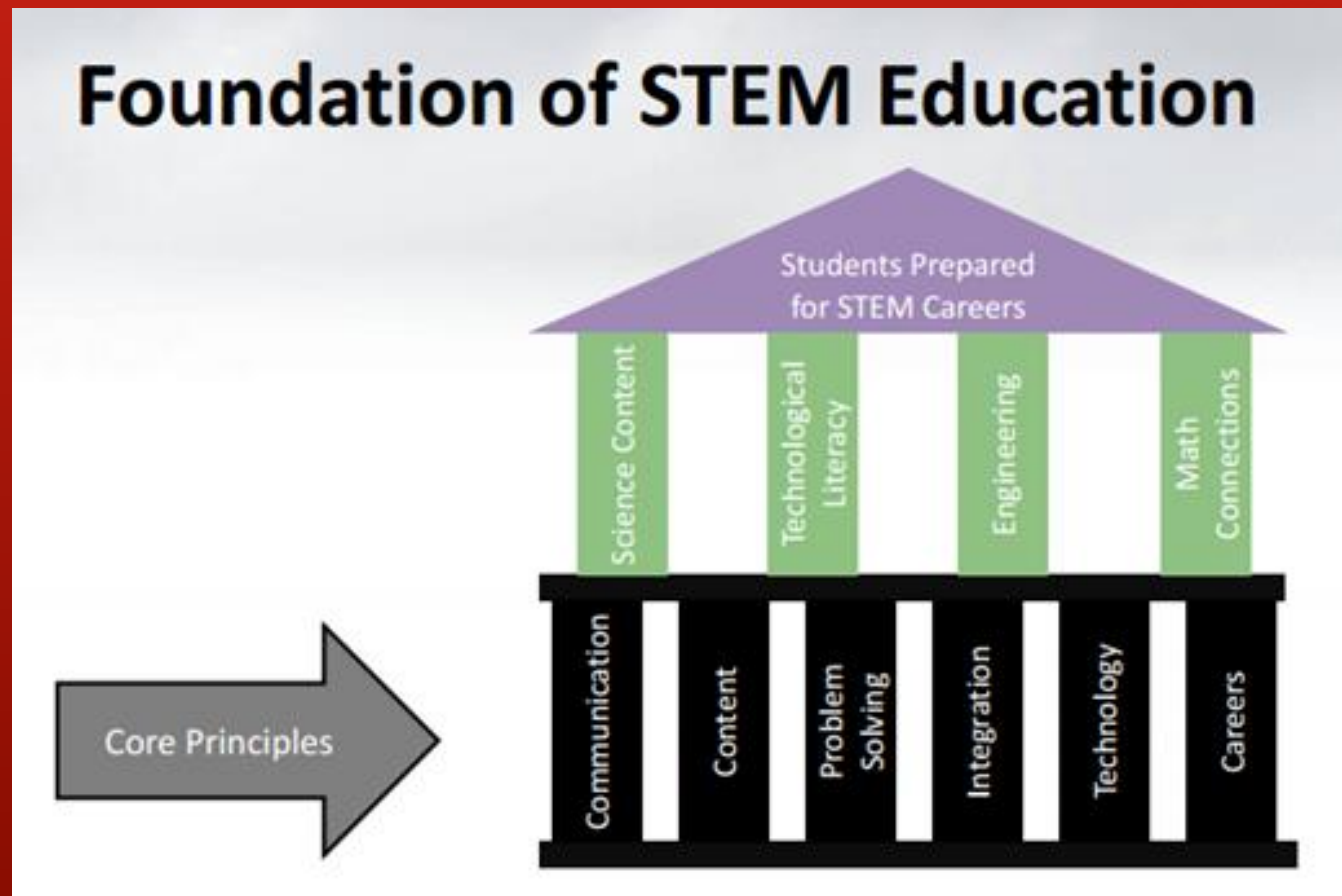
Why?

Students Learn Best by Doing and . . .



- Students retain more if they **actively engage**. (**Doing science**—not just learning about it.)
- Starts with **concrete**, goes to **pictorial**, and then to **abstract** ways of learning (reading)—**not** the other way around.

Why?



Engineering and Design Process



In December, we have 3 Thursdays

- Plan accordingly
 - Ask and Imagine (week 1)
 - Plan and Create (week 2)
 - Create and improve (week 3)

Units of Study for the Month of December

Grade Levels	Topics of Study
Pre – K	
Kindergarten	Living and Non-Living Things – Animals STEM activity – Nest building
1 st Grade	Water STEM activity – Harvesting Water from fog
2 nd Grade	Energy STEM activity – Fun with the Sun
3 rd Grade	Habitats STEM activity – Harmless Holder
4 th Grade	Light STEM activity – Holiday Lights and Circuits
5 th Grade	Cells STEM Activity - Extract DNA from a Banana

S.T.E.M. activities will be expected to take place every Thursday. Effective Dec. 4th.

Kindergarten Unit

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Kindergarten

Integrated Outline

Living and Non-Living Things - Animals

S.T.E.M. Essential Question	S.T.E.M. Enduring Understanding
How does where animals live impact the types of homes they live in? (S.S and Science)	Animals use their surroundings to build their homes.
How does an animals' habitat impact the animals covering? (S.S. and Science)	An animals' covering is determined by the needs of its environment.
How are animals of the past similar or different from the animals of the present? (S.S., Science, Math)	Over time animals have become extinct and endangered.
How are the homes of animals different? (S.S., Science) (past/present) (zoo/farm/home/habitat)	As time has passed, people have taken animals from place to place changing where and how some animals live.



Reading and Literacy	
Literary ELACCKRL1 - 10	Informational ELACCKRI1 - 10
1 Extended Literary Text 2-3 short text connections	1 Extended Informational text 2-3 short text connections
Tumble Books: <ul style="list-style-type: none"> Cassy's Tale Chicken Big Duck!Rabbit! Turtle, Turtle, Watch Out! The First Music For Just One Day Goldfish don't Take Bubble Baths Have You Ever Seen a Duck in a Raincoat? Have You Ever Seen an Octopus with a Broom? A Home for Pearl Squirrel How Do You Read to a Rabbit? Me, I'm a Farmer Meet the Meerkat Oh, Crumps! One Duck Stuck 	Books: <ul style="list-style-type: none"> BobbieGo - Animals BobbieGo - Social Studies: Maps eSeba Books <ul style="list-style-type: none"> Baby Animals Why do Animals Hibernate? Life of a Honey Badger What Lives in a Marsh? Video: <ul style="list-style-type: none"> DiscoveryLearning.com <ul style="list-style-type: none"> The Language of Science: Life Science K-2: Animals Animal Behavior: Animal Cam Ping and Pong: Learn about Plants and Animals Capstone Interactive <ul style="list-style-type: none"> Mammals: Hairy, Milk-Making animals Who Grows Up in the Snow? Who Grows Up on the Farm?

<ul style="list-style-type: none"> Oak the Book Porcupine: A Frickly Love Story Sink or Swim Toilet Tales Trout Are Made of Trees The Wedding 	<ul style="list-style-type: none"> Whose Work is This?
Living and Non-living Thing Animals	
Observe, classify and arrange organisms or materials by attributes into groups of living and non-living.	
Animals: Recognize, classify and identify the similarities and differences in plants according to their attributes.	
STEM Integration	
SKCS1, SKCS2, SKCS3, SKCS4, SKCS5, SKCS6	
Habits of Mind and Nature of Science Standards are integrated throughout the Science teaching and learning process	
Sustainable Animal Habitat (den, nest)	
Mr. McGregor's Garden	
Where in the World Are We	
H1b; H3a,b,g; G2a,b,c; G3	
Map Skills: 1	
Info Skills: 2	
Align - map skills with locations to find different animals	
Comparing Numbers	
MCK.NBT.1 MCK.CC3 MCK.CC4a MCK.CC5 MCK.CC6 MCK.CC7 MCK.MD.3	



2nd Grade Unit

Production, Distribution, & Consumption: Allocation of goods and services
Time, Change, Continuity: Compare Creek/Cherokee of past to modern Georgians Compare Sequoyah's life and modern everyday life
Align -
Math
Place Value to Add & Subtract MCC.2.NBT.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction. Represent and solve problems involving addition and subtraction MCC.2.OA.1 Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. Add and subtract within 20. MCC.2.OA.2 Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

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2nd Grade

Integrated Outline

Energy and Motion – Fun in the Sun

S.T.E.M. Essential Question	S.T.E.M. Enduring Understanding
How did Native Americans use the different forms of energy to survive? (S.S. and Science)	Primitive forms of energy used only natural resources.
What natural resources did the Native Americans use for energy? (S.S. and Science)	Woods, rocks, the sun, and living locations were used as resources for energy.
How are the living conditions for the Native Americans of the past different from the present? (S.S. and Science)	Home constructions, cultural changes (hunter/gathers), currency, writing methods, etc. have changed since the times of the Native Americans.
How are the energy sources of the past and present different? (Science, technology)	Advancements in technology and science have improved or changed our energy sources.
How did trade impact the lives of Native Americans? (S.S., Math, and Science)	Trade changed the lives of the Native Americans by providing materials that could not be found in America, and a need to no longer be hunter/ gathers.
How did the Native Americans move supplies with the natural resources they had available? (S.S., Science, and Math)	Native Americans moved materials using different forms of motion.
How did the colonization of America impact the number of Native Americans? (S.S., Science, and Math)	As more colonist came to America more and more Native Americans were displaced and relocated to other regions of America.



Reading and Literacy	
Literary ELACC2RL1 - 10	Informational ELACC2RI1 - 10
1 Extended Literary Text 2-9 short text connections	1 Extended Informational text 2-9 short text connections
Books:	

<p>ReebieGo – Biographies: American Indians ReebieGo – Social Studies: Long Ago and Today Social Studies: All about Money</p> <p>eSaban Books</p> <ul style="list-style-type: none"> Energy for Earth Sources of Energy <p>Video: DiscoveryLearning.com</p> <ul style="list-style-type: none"> Georgia and Alabama Prior to the Trail of Tears Native Americans: Native Americans Today Native Americans: Learn About the Indigenous Cultures of Native America Native Americans: contact and conflict History of American Indian Achievement: the New Indian Leaders – segment: Sequoyah creates Cherokee Writing system The Language of Science: Physical Science K-2: Force and Motion Ping and Pong: Learn about Energy and Forces Discovering Simple machines: work and Energy Exploring Heat and Light The Language of Science: Physical Science K-2: Force and Motion <p>Capstone Interactive</p> <ul style="list-style-type: none"> Energy Heat, Light, and Fuel Refreshing Look at Renewable Energy <p>The World Almanac Economy, Business, and Energy</p>
Writing
LA.2.ELACC2W3 (Narrative): Write narratives in which they recount a well-elaborated event or short sequence of events, include details to describe actions, thoughts, and feelings, use temporal words to signal event order, and provide a sense of closure.
Science
<p>S2P2a. Identify sources of motion (energy).</p> <p>S2P2b. Describe how motion (energy) is used.</p> <p>S2P3a. Demonstrate how pushing and pulling an object affects the motion of the object.</p> <p>S2P3b. Demonstrate the effects of changes of speed on an object.</p>
STEM Integration
S2CS1, S2CS2, S2CS3, S2CS4, S2CS5, S2CS6
Habits of Mind and Nature of Science Standards are integrated throughout the Science teaching and learning process
<p>Fun in the Sun Solar Cooker</p>
Social Studies
Individual, Groups, Institutions/Location: Creek/Cherokee culture (tools, clothing, homes, making a living, accomplishments) Sequoyah
Location: Creek and Cherokee regions, Creek and Cherokee use of local resources, Sequoyah Cultural and Geographic systems



3rd Grade Unit

Science	
Habitats	S3L1 S3LiA S3LiB S3LiC S3LiD
STEM Integration	
S3CS1, S3CS2, S3CS3, S3CS4, S3CS5, S3CS6, S3CS7, S3CS8	
Habits of Mind and Nature of Science Standards are integrated throughout the science teaching and learning process	
Habitat Restoration: Watershed Invasive Species Stop the Kudzu Harmless Holder	
Social Studies	
Our Democratic Heritage	
Influence of Greece on present Olympia Architecture Choosing leaders Levels of Government: National, state, local Branches of government: Executive, Legislative, Judicial Members of legislative branch: Congress, Senate, Assembly, city commission or council Responsibilities of local and branch of government Location: Equator, Prime Meridian Latitude/longitude Greece Production, Distribution, Consumption Government services: schools, libraries, roads, police/fire/military	
Math	
Operations and Algebraic Thinking: Patterns in Addition and Multiplication MCC3.OA.8 MCC3.OA.9 MCC3.MD.3 MCC3.MD.4 MCC3.MD.6 MCC3.MD.6 MCC3.MD.7	



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3rd Grade

Integrated Outline

Habitats – Harmless Holder

S.T.E.M. Essential Question	S.T.E.M. Enduring Understanding
How does the government pass laws for the EPA and reservations to protect and conserve habitats? (S.S. and Science)	All branches of the government contribute to the conservation of animal habitats.
How does each level of government impact habitat conservation? (S.S. and Science)	People use more and more natural resources reducing animal habitats.
How have humans contributed to the decline in animal habitats by production, distribution, and consumption? (S.S., Science, & Math)	People use natural resources to produce oil for cars, wood for homes, paper, and furniture; metals for cars and mechanical parts.
How do we locate different habitats by using latitude/longitude, the Equator, or Prime Meridian? (S.S. and Science)	People participate in distribution by the spread of natural materials to other regions and locations.
How does pollution impact the animal population in different habitats? (S.S., Science, & Math)	People consume and use a multitude of water that also impacts animal habitats.
How has the amount of animal habitats changed over time? (S.S., Science, & Math)	All locations on the globe can be located by using longitude and latitude.
How has Urban Sprawl impacted the habitats of animals? (S.S., Science, & Math)	Animal populations are impacted by pollution. Laws that have been passed have helped animal populations. Lack of laws, have also reduced animal populations. As cities grow animals will have less of a habitat to live in.

Reading and Literacy	
Literary ELAC3RI1 - 10	Informational ELAC3RI1 - 10
<ul style="list-style-type: none"> Books: <ul style="list-style-type: none"> PeopleGo – Social Studies: Maps Animals: Animal Habitats Earth and Space: Earth Science: Ecosystems Social Studies: U.S. Government Social Studies: People and the Environment eSoco Books <ul style="list-style-type: none"> What Lives in a Marsh? London's Local Government Video: <ul style="list-style-type: none"> DiscoveryLearning.com <ul style="list-style-type: none"> Habitats: How Animals Adapt to Their Environments Biomes: Freshwater and Seawater Biotropika Biology: The Science of Life: Ecology: Organisms in Their Environment EvolutionQuest: Module 03: Processes and Cycles in the Environment: Behind the Numbers Habitats: Homes for Living Things EvolutionQuest: Module 02: Decisions Based on Science: A Zoo Visit Ocean Habitats: Light and Dark Zones Ocean Habitats: Shoreline and Reef Real World Science: Habitats Elementary Video Adventures: Habitats of the World Desert habitats The Tropical Rain Forest: Habitat Planet Habitats around the World The Magic School Bus: Gets Swamped America at Its Best: The American Government Standard Deviants School American Government: The three branches of American Government Standard Deviants School American Government: Executive Branch Standard Deviants School American Government: Introduction to Government Standard Deviants School American Government: The Constitution of the United States Standard Deviants School American Government: The Congress Standard Deviants School American Government: The Judicial System TLC Elementary School: Understanding Government Capstone Interactive <ul style="list-style-type: none"> Who Grows Up in the Snow? Who Grows Up on the Farm? The World Almanac <ul style="list-style-type: none"> U.S. Cities, States, and Population (type in each habitat to get information) Tumble Books <ul style="list-style-type: none"> Unite or Die 	<ul style="list-style-type: none"> Informative/Explanatory <ul style="list-style-type: none"> ELAC3WI2: 2 Informative/explanatory pieces ELAC3WI1: 4, 5, 6, 10, 1-2 short research connection ELAC3WI7: 8, 10, 1-2 narrative detailing a real or imagined experience ELAC3WI1: 2, 3, 9, 10 Writing



Displays



Change to Bulletin Board Requirements

- S.T.E.M. Activities
- Standards
- Tasks
- Circumstance
- Rubric

These changes are expected to be evident by Friday, Nov. 14th

Upcoming Trainings

- November 12th - Interactive Notebooks
- December 8th - Digging Deeper with Content Standards
- Every 2nd Wednesday will be S.T.E.M. PL days for entire STAFF.

What you have...

- S.T.E.M. Certification Rubric
- Classroom Checklist
- Grade level S.T.E.M. Activity for December
- S.T.E.M. sign
- G.R.O.U.P.S. sign
- 4 C's Rubric
- Science Word Wall Words per grade level
- Engineering and Design Process Posters

Questions and Concerns

Thank You!!!

Have A S.T.E.M.-tastic Evening!

