KINDERGARTEN STEM STORYLINES

Engineering Lessons: https://sites.google.com/provo.edu/pcsd-innovative-learning/home/teachers/integrated-stem-lessons/stem?authuser=0

Quarter	Kindergarten SEEd Module Storylines	Approx. Pacing	Supplies needed (Every storyline requires a student journal)	Cross-Curricular Activities	Utah Core State SEEd Alignment	Science and Engineering Practice (SEP)	Cross-Cutting Standards (CC)	Disciplinary Core Ideas (DCI) codes	Assessments	Quick Links to SEEd CANVAS Modules.	Quick Links to Amy's Drive (google slides, student journal files)
QUARTER 1	QUARTER 1									K.1.1 & K.1.2 Weather Patterns	K.1.1 & K.1.2 Weather Patterns
	K.1.1 & K.1.2 Weather Patterns CANVAS K.1.1 & K.1.2 Weather Patterns Google Drive K.1.1 & K.1.2 Weather Patterns				*Standard K.1.1* **Obtain, evaluate, and communicate** information about local, observable weather conditions to describe patterns over time. Emphasize the students' collection and sharing of data. Examples of data could include sunny, cloudy, windy, rainy, cold, or warm. (ESS2.D)	Obtaining, Evaluating and Communicating Information	Patterns	(ESS2) Earth's Systems		K.1.3 Effect of Sunlight	K.1.3 & K.1.4 Effect of Sunlight
	Learning Target(s): 1. Students will collect weather data to find patterns. 2. Students will find information on human behavior based on weather patterns.				*Standard K.1.2* **Obtain, evaluate, and communicate** information on the effect of forecasted weather patterns on human behavior. Examples could include how humans respond to local forecasts of typical and severe weather such as extreme heat, high winds, flash floods, thunderstorms, or snowstorms. (ESS3.B)	Obtaining, Evaluating and Communicating Information	Patterns	(ESS3) Earth and Human Activity		K.1.4 Building a Shade Shelter	K.1.4 Building a Shade Shelter -
	Day 1: During the start of class, ask the kids what the weather is like outside. Go outside and point out any clouds, sunlight, wind or anything else weather related. Is it sunny outside? Is is rainy outside? Mark the calendar with a weather sticker or draw something (a sun, a raindrop) to indicate what the weather is like outside today. (Repeat this Weather Calendar exercise daily for at least 2 weeks or longer.)	(25 mins in a week) **5 mins daily**			**Teacher Resources:**	**Supplemental Resources:**				K.2.1 & K.2.2 Survival Needs	K.2.1 & K.2.2 Survival Needs of Animals
	Day 2: Phenomena video of a snowman melting, students draw/write in their know, wonder, learned table (in student journal). They sing the song "Once there was a snowman" and act out a snowman melting.	5 minutes	A large current calendar, and markers or weather stickers. tissue paper, glue, scissors, graph, crayons or weather stickers, matching cards, Paperdoll or paperdoll template. crayons or scrap paper and glue for decorating, tissue paper	Music/Dance!		**Engineering Design:** 01K Don't Squish the Bugs! (Students move like bugs would during various weather events. i.e when it's sunny I come outside, when it rains I hide in the ground.) *Supplies:* Music, and an area to dance				K.2.1 & K.2.2 Survival Needs of Plants	K.2.1 & K.2.2 Survival Needs of Plants
	Day 3: Gather activity students look at pictures of trees in winter, summer, spring and fall. Students draw/color a tree in each of the seasons(in student journal). (*Optional idea 1*: Split this activity throughout the year, have the students glue colored tissue paper on a blank tree template to make a summer tree (green) in August/Sept, a fall tree (orange, yellow, red)in Oct/Nov, a winter tree in Dec/Jan/Feb (bare branches) and a spring tree (white/pink) in Mar/April. *Optional idea 2:* Go outside and take a picture of your class in front of a tree, repeat this at the beginning of each term or season.)	30 mins		Art!		**Engineering Design:** 02 K Raindrops on Roses and Whiskers on Kittens (Students create a song and dance with a team to be less scared of thunderstorms.) *Supplies:* Music, and an area to dance					K.2.3 & K.2.4 Survival of the Creative (Survival Needs of Humans)
	Day 4: Reason activity students go on a walk outside and collect things found in nature. Focus on patterns - fall leaves, or flowers, what is available right now that wouldn't be available during a dirfferent season--have students identify why. They build a nature walk collection and draw and label (in student journal).	30 mins		Art!							K.2.4 REDUCE, REUSE, RECYCLE, Survival Needs of Humans
	Day 5: Communicate activity students complete a graph using the number of sunny, cloudy, rainy, stormy, snowy or windy days there were for the past week. (You can wait longer and do this graph when you have more data.)	30 mins		Math!							K.3.1 & K.3.2 Force & Motion
	Day 6: Phenomena, students watch a video of Virginia Blizzard. Have students talk about what they do in summertime and what they do in wintertime, listen to the "In Summer" song from Frozen.	10 mins		Music!							
	Day 7: Gather. Explore phenomena of kids wearing different clothing for different seasons. (*Optional idea:* use to box of dress-up clothing for the students to 'guess' what season they are ready for.)	30 mins									
	Day 8: Reason activity students match activities to the season. Listen to or sing the "what do you do in the summertime song."	10 mins		Music!							
	Day 9: Communicate Students dress a paperdoll for the season. (Repeat this acivity in each of the 4 main seasons, spring, summer, fall and winter.)	30 mins		Art!							
	K.1.3 & K.1.4 Effect of Sunlight CANVAS K.1.3 & K.1.4 Effect of Sunlight Google Drive K.1.3 & K.1.4 Effect of Sunlight				*Standard K.1.3* **Carry out an investigation** using the five senses, to determine the effect of sunlight on different surfaces and materials. Examples could include measuring temperature, through touch or other methods, on natural and man-made materials in various locations throughout the day. (PS3.B)	Planning and Carrying out Investigations	Cause & Effect	(PS3) Energy			
	Learning Target(s): 1. Students will investigate places that are cold or hot and give reasons for why. 2. Students design a home/shelter that can protect an animal from sunlight, or reduce warming effects.				*Standard K.1.4* **Design a solution** that will reduce the warming effect of sunlight on an area. Define the problem by asking questions and gathering information, convey designs through sketches, drawings, or physical models, and compare and test designs.(PS3.B, ETS1.A, ETS1.B, ETS1.C)						
	Day 1: Phenomena. Take a pitcher of juice and tell the students that you want to make a popsicle, but you only have juice. (Hide around the room various things that could be used to make a popsicle - an ice cube tray, popsicle sticks, a spoon and paper cup, popsicle tray.) What can you do to turn the juice into a popsicle? (Have ths students find the 'hidden' things around the classroom that would help them turn juice into a popsicle. Use the juice you have to make a popsicle. (Optional: if you don't want to bring in juice, bring in a box of thawed otter pops (have another one ready to go that's already frozen.)	15-30 mins			**Teacher Resources:**	**Supplemental Resources:**					
	Day 2: Phenomena video of making popsicles and enjoy the popsicles you made the previous day. Write in your student journal what you would do to create a popsicle (push to have the students be creative, what shape will your popsicle be? Are you going to add fruit inside your popsicle? Can you make a popsicle with something other than juice?)	30 mins	Things used to make a popsicle, spoons, popsicle sticks, ice cube tray...etc... , Juice and popsicle making supplies. Hot things and cold things cards, infrared thermometer - optional Little Baby Bunny book, crayons, scissors Outside materials or building materials (if doing this inside) fabirc, tape, aluminum foil, yarn..etc Any scrap or safe recycled materials. Science Kit has: ice cube tray, popsicle sticks, flashlights, foil, parchment paper, foam, filter paper.	Art!		**Engineering Design:** 03K The Monster's Blanket (Students create a blanket for a monster who is cold.) *Supplies:* Various fabrics to test for warmth.					
	Day 3: Gather. Put pictures of cold things and hot things around the classroom for the students to find (Or read a book with hot things cold things.) . Students will cut out and sort images of things that are cold and hot: https://www.getepic.com/collection/875833/hot-and-cold) Or https://www.youtube.com/watch?v=wbIoQnPjcpU	30 mins									
	Day 4: Gather Students go outside and find places that are cool and places that are hot and compare them. Teacher brings out a board with various materials attached to it. The students come and touch the items to find what is cool and what is hot. (You may use a infrared thermometer to get exact temp if wanted.)	1 hour (can be split into 2 days)									
	Day 5: Tie to Students world/Reason Talk about pets. do any of the students have a pet, what do pets need in order to be safe and happy-- line up the class discussion to keeping pets warm in winter and cool in summer.	30 mins									
	Day 6: Reason Read the story of where animals build their homes. Then introduce the baby bunny book. Print the little baby bunny books, read the book to the students, make the book. Students think of designs for the baby bunny home	30 mins		ELA!							
	Day 7: Communicate Students will draw and then make a little baby bunny home using either outside materials (leaves, twigs, sticks, flowers, grass etc.) or materials provided by the teacher (fabric, popsicle sticks, aluminum foil, yarn, tape, etc.	30 mins		Engineering Build!							
	Day 8: Communicate Students discuss their bunny homes, was the bunny warm? dry? safe from the sun?	30 mins		Engineering Test!							
	Day 9: Communicate *Optional:* Have students rebuild a better bunny home than the one they made the day before.	30 mins		Engineering Rebuild and Retest!							
	K.1.4 Building a Shde Shelter CANVAS K.1.4 Building a Shade Shelter Google Drive K.1.4 Building a Shade Shelter				*Standard K.1.4* **Design a solution** that will reduce the warming effect of sunlight on an area. Define the problem by asking questions and gathering information, convey designs through sketches, drawings, or physical models, and compare and test designs.(PS3.B, ETS1.A, ETS1.B, ETS1.C)	Constructing Explanations and Designing Solutions	Cause & Effect	(PS3) Energy (ETS1.A) Defining and Delimiting an Engineering Problem (ETS1.B) Developing Possible Solutions (ETS1.C) Optimizing the Design Solution			
	This is a continuation of the lesson plan above, but it can be taught in addition or separately from the lesson above.				**Teacher Resources:**	**Supplemental Resources:**					
	Learning Target(s): 1. Students design a home/shelter that can protect an animal from sunlight, or reduce warming effects.		Animal Homes (Usborne book) , heat lamp, infrared thermometer, flashlights, Outside materials or building materials (if doing this inside) fabirc, tape, aluminum foil, yarn..etc Any scrap or safe recycled materials, masking tape, paint stir sticks, plastic table cloths, cardstock, fabric			**Engineering Design:** 04K Penny's Problem (Students create a home for a puppy who is too hot.) *Supplies:* supplies to build a home for a puppy (can be natural outside materials twigs/leaves or can be more extensive materials.					
	Day 1: Phenomena Students watch a video of natural buildings (made by animals) versus manmade buildings. Explore and read about different animals homes.	30 mins		ELA!							
	Day 2: Gather/Tie to Student's World Read the story of the doggy Penny. See if students can identify what is wrong with the Penny. (getting too hot outside.) After students identify that Penny the dog is getting too hot, ask the students if they have ever gotten hot on a sunny day. What do you do when you are hot outside?	30 mins									
	Day 3: Reason Use a heat lamp to shine a light on a piece of black cloth and a piece of white cloth. Show the students how the white cloth stays cooler than the black cloth. Discuss with the students how different types of material collect different amounts of heat. Talk and demo other ways to cool down the material -- for example spray water on the cloth, put something behind the cloth and in front of the cloth to show what keeps things cool.	30 mins									
	Day 4: Reason Students build a shelter frame (or have frames already built) have students choose a materials to go on the top of the frame to create shade for Penny the dog.	30 mins		Engineering Build!							
	Day 5: Communicate Students shine a light straight down on the shelter to see if it provides shade for Penny. Use a heat lamp to test if the shade also protects Penny from the heat.	30 mins		Engineering Test!							
	Day 6: Communicate Move the light so that shines from the side. Ask students what can you do to create more shade for Penny the dog now that the light has moved? Students modify their deisgn and test it again.	30 mins		Engineering Rebuild and Retest!							
Quarter 2	Quarter 2										
	K.2.1 & K.2.2 Survival Needs of Animals CANVAS K.2.1 & K.2.2 Survival Needs of Animals Google Drive K.2.1 & K.2.2 Survival Needs of Animals				*Standard K.2.1* **Obtain, evaluate, and communicate** information to describe patterns of what living things (plants and animals, including humans) need to survive. Emphasize the similarities and differences between the survival needs of all living things. Examples could include that plants depend on air, water, minerals, and light to survive, or animals depend on plants or other animals to survive. (LS1.C)	Obtaining, Evaluating and Communicating Information	Patterns	LS1.C			
	Optional: Start this set of lessons by having students grow plants in paper cups. Explore plants growing in sunlight versus plants growing in the dark. Start this experiement early and return to it throughout the unit.	20 mins setup, return for short 3-5 min checks as the plants grow			*Standard K.2.2* **Obtain, evaluate, and communicate** information about patterns in the relationships between the needs of different living things (plants and animals, including humans) and the places they live. Emphasize that living things need water, air, and resources and that they live in places that have the things they need. Examples could include investigating plants grown in various locations and comparing the results or comparing animals with the places they live. (LS2.B, ESS3.A)						
	Learning target(s): Students find patterns in what all living things need, mainly: food, water, shelter, air for animals and sunlight, minerals, water, air for plants.				**Teacher Resources:**	**Supplemental Resources:**					
	Day 1: Phenomena Students observe how cows eat grass and lions do not eat grass. Students read/hear the story Bear wants more.	10 mins		ELA!		**Engineering Design:** 06K Climb Every Mountain *Supplies:* printed parts of animal and habitat book (provided in folder), tape, scissors, ribbon					
	Day 2: Gather. Students think about what they eat and how their pets eat different things. Write down the different things students come up with, see if they can get any patterns from what they have written down.	10 mins									
	Day 3: Reason Students watch a video of animals eating and sort a series of cards into 2 groups. (How the students sort the cards is less important than the students being able to say why they sorted them the way they did. If students have a good reason for why they chose that sorting then it's okay.)	15 mins									
	Day 4: Communicate. Students sort animals into 3 groups: a group that eat plants, a group that eats animals, a group that eats both plants and animals.	15 mins	Food Sources Cards, Animal Homes (Usborne book), Bear Wants More, Shelter Cards								
	Day 5: Phenomena: Students observe a bear living in a cave and explore the Animal Homes book. Students match a series of animal cards with the correct home where that animal lives.	20 mins		ELA!							
	Day 6: Gather Students learn more about shelters and sort them into groups (animals that build shelter, animals that find shelter, animals that use their body as shelter. Use the second Shelter powerpoint to learn more about different animal homes.	40 mins									
	Day 7: Gather. Students learn more about shelters and sort them into groups (animals that build shelter, animals that find shelter, animals that use their body as shelter.	15 mins									
	Day 8: Reason. Students give reasons for why animals need the shelters that they do. (A bird needs a nest high in the tree away from predators. A bee lives in a hive to keep warm in a large group and to store honey.)	30 mins									
	Day 9: Communicate Students draw ways that humans make and use shelters. (Hard hats can be considered a type of shelter that protects your head.)	15 mins									
	K.2.1 & K.2.2 Survival Needs of Plants CANVAS K.2.1 & K.2.2 Survival Needs of Plants Google Drive K.2.1 & K.2.2 Survivial Needs of Plants				*Standard K.2.2* **Obtain, evaluate, and communicate** information about patterns in the relationships between the needs of different living things (plants and animals, including humans) and the places they live. Emphasize that living things need water, air, and resources and that they live in places that have the things they need. Examples could include investigating plants grown in various locations and comparing the results or comparing animals with the places they live. (LS2.B, ESS3.A)						
	Learning target(s): Students find patterns in what all living things need, mainly: food, water, shelter, air for animals and sunlight, minerals, water, air for plants.				**Teacher Resources:**	**Supplemental Resources:**					
	Optional: If you had students grow plants, show the difference between plants growing in sunlight and in shade.					**Engineering Design:** 05K A Rose by Any Other Name *Supplies:* printed parts of various plants (provided in folder) printed top/middle/bottom paper (1 per student) supplies to make flowers- pipe cleaners, paper, foam, tin foil (anything available will work) tape					
	Day 1: Phenomena Watch a video of plants growing (timelapse).	5 mins									
	Day 2: Gather. students draw and label a drawing of a flower.	30 mins		Art!							
	Day 3: Gather/Tie to students world. Students sort a series of pictures of a plant growing. Discuss with the class what is needed for a plant to grow.	15 - 30 mins									
	Day 4: Reason: Bring in plants and have students identify parts of the plant and what functions that part has. (Leaf makes food, Stem hold up the plant, roots grow underground.)	15 - 30 mins	Gloves, Seeds (Bachelor Buttons), Paper cups (1 per student), 1 pitcher for water								
	Day 5: Communicate. Students determine what is needed by plants, animals and both.	15 mins									
Quarter 3	Quarter 3										
	K.2.3 & K.2.4 Needs of Living Things **CANVAS K.2.3 & K.2.4 Needs of Living Things** Google Drive K.2.3 & K.2.4 Needs of Living Things				Standard K.2.3 Obtain, evaluate, and communicate information about how living things (plants and animals, including humans) affect their surroundings to survive. Examples could include squirrels digging in the ground to hide their food, plant roots breaking concrete, or humans building shelters. (ESS2.E)						
					Standard K.2.4 Design and communicate a solution to address the effects that living things (plants and animals, including humans) experience while trying to survive in their surroundings. Define the problem by asking questions and gathering information, convey designs through sketches, drawings, or physical models, and compare designs. Emphasize students working from a plant, animal, or human perspective. Examples could include a plant growing to get more sunlight, a beaver building a dam, or humans caring for the Earth by reusing and recycling natural resources. (ESS3.C, ETS1.A, ETS1.B, ETS1.C)						
	Learning Target: Students will determine how animals affect or change their surrounding to survive.				**Teacher Resources:**	**Supplemental Resources:**					
	Day 1: Show video of weaver birds creating a nest. (https://www.youtube.com/watch?v=SDAv2H_Sxwg)The weaver bird has as very unique nest, do you see where they built their nest? Focus on all the different aspects of where the nest is built. The weaver bird could have picked a tree without throns, why did it pick the acacia tree with long thorns? The weaver bird could build with sticks--why do you think it chooses grass?					**Engineering Design:** 07K Home Tweet Home *Supplies:* Supplies to make a birdhouse or a birdfeeder (Something as simple as a pinecone painted with honey and birdseed works.)					
	Day 2: Gather. Did you know that animals and plants are creative? Let's see some creative animals! Animals live outside, they can be exposed to weather, sunlight, harsh conditions-- lack of food. lack of water. Let's explore different animals. (rotation stations with puzzles. to solve)		Paper plates (1 per student), paint to color paper plates, 1 roll string (1 section per student), jumbo popsicle sticks								
	Day 3: Animals use things in their environment to stay alive. Students fill out the Problem- Solution charts for various animals.					**Engineering Design:** 08K Caring for Earth *Supplies:* Students used recycled materials to create something useful.					
	Day 4: Wild kratts squirrels digging acorns. Hank the Heron (https://www.youtube.com/watch?v=1M5sfVA7xEQ)						Patterns	(ESS3) Earth and Human Activity			
	Day 5: plants can solve problems too.										
	Day 6: Observe various plants solving problems.										
	Day 7: Fill out problem-solution charts for plants.										
	Day 8: Humans solve problems too. (Puzzle lab)										
	Quarter 4										

Quarter 4	**K.3.1 & K.3.2 Force & Motion** **CANVAS K.3.1 & K.3.2 Force & Motion** **Google Drive K.3.1 & K.3.2 Force & Motion**		Standard K.3.2 Analyze data to determine how a design solution causes a change in the speed or direction of an object with a push or a pull. Define the problem by asking questions and gathering information, convey designs through sketches, drawings, or physical models, and compare and test designs. Examples of problems requiring a solution could include having a marble or other object move a certain distance, follow a particular path, or knock down other objects. (PS2.A, PS2.B, PS2.C, PS3.C, ETS1.A, ETS1.B, ETS1.C)	Obtaining, Evaluating and Communicating Information	Patterns	(ESS3) Earth and Human Activity
	Lesson 1: Push & Pulls song, videos. What is a force?		Standard K.3.1 Plan and conduct an investigation to compare the effects of different strengths or different directions of forces on the motion of an object. Emphasize forces as a push and pull on an object. The idea of strength should be kept separate from the idea of direction. Non-contact forces, such as magnets and static electricity, will be taught in Grades 3 through 5. (PS2.A, PS2.B, PS2.C, PS3.C)			
	Lesson 2: Things I push, things I pull. Push or Pull activity.		**Teacher Resources:**	**Supplemental Resources:**		
	Lesson 3: Gravity experiments, will it fall?			**Engineering Design:** 09K Afraid of Heights *Supplies:* Students practice safety on the playground. Playground equipment is used-cones, balls, teacher decides which activity to have students participate in.		
	Lesson 4; Push and Pull cut and paste activity.					
	Lesson 5: exploring speed activity.	toy cars, paperclips, wooden cubes, magnet wands, feathers, pom poms, balloons, cotton balls.		**Engineering Design:** 10K Lost My Marbles *Supplies:* Students try to knock down a block tower using a marble bucket, they create a rolling marble painting. Swinging device (borrowed from STEM Department), marbles, blocks, paint, small lipped cardboard box for marble drawing, scissors, tape, markers.		
	Lesson 6: Magnet Mazes					
	Lesson 7: Marshmallow Motion					

FIRST GRADE STEM STORYLINES

Engineering Lessons: https://sites.google.com/provo.edu/pcsd-innovative-learning/home/teachers/integrated-stem-lessons/stem?authuser=0

2nd SEEd Module Storylines	Approx. Pacing	Supplies needed (Every storyline requires a student journal) Most Storylines use a google slideshow, but it is not always required to use it:	Cross-Curricular Activities	Utah Core State SEEd Alignment	Science and Engineering Practice (SEP)	Cross-Cutting Standards (CC)	Disciplinary Core Ideas (DCI) codes	Assessments	Quick Links to SEEd CANVAS Modules.	Quick Links to Amy's Drive (google slides, student journal files)
QUARTER 1									1.1.1 & 1.1.3 Here Comes the Sun	1.1.1 & 1.1.3 Here comes the Sun (Predictable movement of the Sun, Moon & Stars)
1.1.1, 1.1.2 & 1.1.3 Astronomy **CANVAS 1.1.1, 1.1.2 & 1.1.3 Astronomy** **Google Drive 1.1.1, 1.1.2 & 1.1.3 Astronomy**				***Standard 1.1.1* Obtain, evaluate, and communicate information** about the movement of the Sun, Moon, and stars to describe predictable patterns. Examples of patterns could include how the Sun and Moon appear to rise in one part of the sky, move across the sky, and set; or how stars, other than the Sun, are visible at night but not during the day. (ESS1.A)	Obtaining, Evaluating and Communicating Information	Patterns	(ESS1) Earth's Place in the Universe		1.1.2 Time of Year	1.1.2 It's that time of year! (Patterns of Sunlight, observed over a Year)
Learning Targets: 1. I can find repeatable patterns in the movement of the sun, moon and stars. 2. I can create a device to monitor the movement of shadows. 3. I can determine how the movements of the sun effect plants (this last one will be revisited later.) TEACHER INSTRUCTIONS				***Standard 1.1.3*** **Design** a device that measures the varying patterns of daylight. Define the problem by asking questions and gathering information, convey designs through sketches, drawings, or physical models, and compare and test designs. Examples could include sundials for telling the time or tracking the movement of shadows throughout the day. (ESS1.B, ETS1.A, ETS1.B, ETS1.C)"	Constructing Explanations and Designing Solutions	Patterns	(ESS1) Earth's Place in the Universe (ETS1.A) Defining and Delimiting an Engineering Problem (ETS1.B) Developing Possible Solutions (ETS1.C) Optimizing the Design Solution			1.1.3 Turn on the Sunlight (Patterns of Daylight)
Lesson 1: Phenomena of the Sun rising in the east and setting in the west.		Astronomy Slideshow, Draw a Model and Investigation (Astronomy Journal), PBS Video "Across the Sky", Vocab Card: Pattern		**Teacher Resources:**	**Supplemental Resources:**					1.2.1 Effects of Sunlight on Plant Growth
Lesson 2: Introduction to Sun and Space		Astronomy Slideshow, Globe, Balloon, Vocabulary Cards: gas, sun, earth, atmosphere, outer space, surface	Art & Dance! (See slide 23 teacher notes for supplementary activity) Aboriginal Sun Creation Myth, Aboriginal Sun Walking Up Dance and Aboriginal Sun Dot Art		Engineering Design: 00 Billy Goats Fluff ***Suppiles:*** Tray with water, small plastic animals, materials to build a little raft (aluminum foil, popsicle sticks etc)				1.1.2 Turn on the Sunlight	1.2.2 & 1.2.3 Animals & Habitats
Lesson 3: The Earth & the Sun		Astronomy Slideshow, Globe, Flag/Pin, Hula Hoop, Horizon Sketch Page (Astronomy Journal), Vocab Cards: planet, horison, orbit, rotates								1.2.4 Animals & Survival
Lesson 4: Day & Night Demonstration		Astronomy Slideshow, Globe, Hula Hoop, Flag/Pin, Flashlight, book "Introducing Planet Earth."								1.3.1 The Sound of Music (How Vibrations create Sound)
Lesson 5: The Pattern of the Sun		Astronomy Slideshow, PBS Video Sunrise to Sunset							1.2.3 Animals and Habitats	1.3.2 & 1.3.3 This Little Light of Mine (Experiments with Light)
Lesson 6: Shadow Phenomena		Astronomy Slideshow, Video: Moving Shadows, Book: Bear Shadow, Vocab Card: Shadow							1.2.4 Animals and Survival	1.3.4 Can you hear me now? (Communicating using sound or light)
Lesson 7: Tracking Shadows		Astronomy Slideshow, Art supplies for shadow trackers, sticks, paper towel rolls, pool noodles, empty tin cans, straws, masking tape, packing tape, hot glue gun with glue sticks, plates, trays, poster board							1.3.1 The Sound of Music	
Lesson 8: Phenomena Star Phenomena		Astronomy Slideshow, Flahlights, Readworks Article "Why don't we see stars in the daytime?, black construciton paper, white crayons, glue, vocab card: stars.								
Lesson 9: Gather Star Facts		Astronomy Slideshow, vocab cards: stars, dusk, dawn, universe								
Lesson 10: Moon Phenomena		Astronomy Slideshow, moon phases video, lunar cycle 1, lunar cycle 2							1.3.4 Can you hear me now?	
Lesson 11: Moon Facts		Astonomy Slideshow, vocab cards: moon, moon phase								
Lesson 12: Moon Phases		Astronomy Slideshow, 5 signs (one labeled "SUN" four blank), hula hoop, globe, flashlight								
Lesson 13: Summer Phenomena		Astronomy Slideshow, daylight data chart, PBS video: Sunrise Sunset Summer and Winter, Article "Sunrise, Sunset" and "The longest and shortest days", video: reason for seasons, flashlight, (or lamp with extension cord), dark room, styrofoam ball, large straw, rubber band, flexible plastic cup (5.5oz), scissors, tape, thumbtack or sticky dot, vocab card: seasons								
Lesson 14: Temperature		Astronomy Slideshow, Temperature data chart, Earth model, Vocab card: temperature								
Lesson 15: Plants and Seasons		Astronomy slideshow, Plants in Seasons collection (get epic), plant cards to sort.								
1.1.1 & 1.1.3 Sun Patterns/Here Comes the Sun **CANVAS 1.1.1 & 1.1.3 Sun Patterns/Here Comes the Sun** **Google Drive 1.1.1 & 1.1.3 Sun Patterns**				***Standard 1.1.1* Obtain, evaluate, and communicate information** about the movement of the Sun, Moon, and stars to describe predictable patterns. Examples of patterns could include how the Sun and Moon appear to rise in one part of the sky, move across the sky, and set; or how stars, other than the Sun, are visible at night but not during the day. (ESS1.A)	Obtaining, Evaluating and Communicating Information	Patterns	(ESS1) Earth's Place in the Universe			
Learning Target: 1. I can find repeatable patterns in the movement of the sun. 2. I can create a device to measure shadows caused by the sun's pattern of motion across the sky.				***Standard 1.1.3*** **Design** a device that measures the varying patterns of daylight. Define the problem by asking questions and gathering information, convey designs through sketches, drawings, or physical models, and compare and test designs. Examples could include sundials for telling the time or tracking the movement of shadows throughout the day. (ESS1.B, ETS1.A, ETS1.B, ETS1.C)"	Constructing Explanations and Designing Solutions	Patterns	(ESS1) Earth's Place in the Universe (ETS1.A) Defining and Delimiting an Engineering Problem (ETS1.B) Developing Possible Solutions (ETS1.C) Optimizing the Design Solution			
Lesson 1: Phenomena Explore Phenomena of 24 hours in one location (sunrise/sunset) or star trails, Build a Sundial.	30 min-1 hour	Computer (for watching phenomena videos, slideshow and answering questions), student journal, chalk, paper plates, colored pencils or marker or crayons, scissors, regular pencil, Solar Panels, LED lights, batteries, solar panels, alligator clips, modeling clay, houses and neighborhood plot, flashlights optional: Squishy Circuits, modeling clay, playdough, batteries	WONDERS: Me on the Map	**Teacher Resources:**	**Supplemental Resources:**					
Lesson 2: Gather Take the sundial outside to record observations for the sun's location. I suggest that you spread this out over mulitple 5 min times throughout the day.	30 mins (must be split 10 minutes morning, lunch, afternoon-- more often is better)		Shadow Play/Art		**Engineering Design:** 01 What a Wonderful World! Students use create an instrument that can wake up the rooster when it's morning time. *Supplies:* materials to make a small instrument.					
Lesson 3: Gather Take the sundial outside to record observations for the sun's location. I suggest that you spread this out over mulitple 5 min times throughout the day.	30 mins (must be split 10 minutes morning, lunch, afternoon-- more often is better)									
Lesson 4: Gather Finish recording observations for the sun's location on your sundial.	30 mins (must be split 10 minutes morning, lunch, afternoon-- more often is better)				**Engineering Design:** 02 Summertime Santa Students learn how seasons in the northern hemisphere and in the southern hemisphere are opposite of each other. *Supplies:* Madlibs cards					
Lesson 5: Reason Discuss with your students where their sundial lines were drawn. Why did the lines move? Why did the lines change heights?	30 mins									
Lesson 6: Reason (Keep the sundials.) Students are going to use the information they collected from the sundial to place a solar panel to collect sunlight. Introduce a circuit, have students create a circuit with a 9V battery and an LED light. Show the difference between using a battery and a solar panel. Can you get the light to shine using a battery?	30 mins									
Lesson 7: Students create and decorate a small house. (If short on time, teacher can pre-create the small house (or have a parent volunteer do this).	30 mins									
Lesson 8: Communicate Have students place their solar panel on their house and test it outside. Can you get the light to shine?	30 mins									
Lesson 9: Communicate Have students go outside and place their house on the map. Students decide whats the best place to turn the solar panel so it can catch the most light.	30 mins									
1.1.2 Patterns in the Sky/It's that time of year! **CANVAS 1.1.2 It's that time of year!** **Google Slides 1.1.2 It's that time of year!**				***Standard 1.1.2*** Obtain, evaluate, and communicate information about the patterns observed at different times of the year to relate the amount of daylight to the time of year. Emphasize the variation in daylight patterns at different times of the day and different times of the year. Examples could include varying locations and regions throughout the state, country, and world. (ESS1.B)	Obtaining, Evaluating and Communicating Information	Patterns	(ESS1) Earth's Place in the Universe			
Learning Target: I can find patterns in daylight and time of year.		Dark and Light charts/cards		**Teacher Resources:**	**Supplemental Resources:**					
Lesson 1: Phenomena Students watch timelapse videos of sunrises and sunsets and talk about their observations. They then watch a video with Arctic midnight--in which the sun doesn't set.	30 mins				**Engineering Design:** 03 Groundhog Day Students take pictures outside each day and compare them. Overtime they look at all the pictures to see how from one day to the next the days look the same but if you jump from one day to several days later the days look different. *Supplies:* you can take pictures of small animals or toys is wanted.					
Lesson 2: Gather/Reason Students look at light and dark charts and engage in a class discussion about when it's light and dark outside.	1 hour									
Lesson 3: Communicate Students are given a card that asks "Where is it dark during dinner?" (etc) They then have to "travel" around the "world" (classroom) to find the correct location.	1 hour									
Quarter 2										
1.1.3 Turn on the Sunlight **CANVAS 1.1.3 Turn on the Sunlight** **Google Drive 1.1.3 Turn on the Sunlight**				***Standard 1.1.2*** Obtain, evaluate, and communicate information about the patterns observed at different times of the year to relate the amount of daylight to the time of year. Emphasize the variation in daylight patterns at different times of the day and different times of the year. Examples could include varying locations and regions throughout the state, country, and world. (ESS1.B)	Obtaining, Evaluating and Communicating Information	Patterns	(ESS1) Earth's Place in the Universe			
Learning Target: I can find patterns to compare the amount of sunlight to the season.		Chalk (optional), string, metal brads (for orbiting activity/artwork)		**Teacher Resources:**	**Supplemental Resources:**					
Lesson 1: Phenomena Students watch a video of season's changing and draw/color a Sun/Earth/Moon orbit system.	30 mins				**Engineering Design:** 04 Jack and the Beanstalk Students learn what's neded to grow a plant. *Supplies:* materials to grow a plant, cups, seeds, water.					
Lesson 2: Gather Students go outside and using string, chalk and a friend they draw the orbit system of the Sun/Earth/moon and do activities to figure out when they get more or less sunlight.	30 mins									
Lesson 3: Reason Students look at season pictures and come up with ways that the seasons are different from each other.	30 mins									
Lesson 4: Communicate Students do an art activity of decorating trees from different seasons, they can decorate their trees using tissue paper and glue, or colored pencils, stamps etc... the they use a graphic organizer to write a paper about which season has the most sunlight or the least sunlight.	1 hour		ART TEACHER EVENT!							
1.2.1 & 1.2.2 Seasonal Patterns/Effects of Sunlight on Plant Growth **CANVAS 1.2.1 & 1.22 Effects of Sunlight on Plant Growth** **Google Drive 1.2.1 & 1.2.2 Effects of Sunlight on Plant Growth**				Standard 1.2.2 Construct an explanation by observing patterns of external features of living things that survive in different locations. Emphasize how plants and nonhuman animals, found in specific surroundings, share similar physical characteristics. Examples could include that plants living in dry areas are more likely to have thick outer coatings that hold in water, animals living in cold locations have longer and thicker fur, or most desert animals are awake at night. (LS1.A, LS1.D)						
				Teacher Resources:	**Supplemental Resources:**					
					Engineering Design: 05 Whale of a Tale *Supplies:* Small, short paper cups with half of the bottom cut out by the teacher A variety of materials, like pipe cleaners, felt, cotton balls, feathers, shredded paper, paper towels, aluminum foil etc. Hot glue gun (to be used only by an adult) and hot glue Comb, water bowl, glitter (for optional demo) a large bowl of water glitter (for extra fun you can bring in different bowls and label them for different oceans: Atlantic, Pacific, Indian, Arctic, Antarctic.					
Quarter 3										
1.2.3 Animals and Habitats **CANVAS 1.2.3 Animals and Habitats** **Google Drive 1.2.3 Animals and Habitats**				**Standard 1.2.3** **Obtain, evaluate, and communicate** information about the patterns of plants and nonhuman animals that are alike, but not exactly like, their parents. An example could include that most carrots are orange and shaped like a cone but may be different sizes or have differing tastes. (LS3.A, LS3.B)	Obtaining, Evaluating and Communicating Information	Patterns	(LS3) Heredity			
Learning Target: I can identify how baby animals are similar to their parents.		Are you my mother book, animal flashcards, colored pencils/crayons		**Teacher Resources:**	**Supplemental Resources:**					
Lesson 1: Phenomena Read, Are you my mother?	15 mins									

FIRST GRADE STEM STORYLINES

Engineering Lessons: https://sites.google.com/provo.edu/pcsd-innovative-learning/home/teachers/integrated-stem-lessons/stem?authuser=0

Quarter 3	**Lesson 2: Gather** Play an outside game: The teacher will call out an animal name the kids response with that animal noise or call	15-30 mins		Dance!		**Engineering Design:** 06 Ice Cream! Students uses patterns to classify ice creams. *Supplies:* Ice cream cone printables, pictures of humans from around the world, paper and scissors (real ice cream is optional).		
	Lesson 3: Reason Match animal flashcards parent to baby.	15-30 mins						
	Lesson 4: Communicate Write about your favorite baby animal and how it is simliar to the parent (Draw the baby animal with the parent)	30 mins						
	1.2.4 Animals and Survival CANVAS 1.2.4 Animals and Survival Google Drive 1.2.4 Animals and Survival				**Standard 1.2.4 Construct an explanation** of the patterns in the behaviors of parents and offspring which help offspring to survive. Examples of behavioral patterns could include the signals that offspring make such as crying, chirping, and other vocalizations or the responses of the parents such as feeding, comforting, and protecting the offspring. (LS1.B)	Constructing Explanations and Designing Solutions	Patterns	(LS1) Molecules to Organisms
	Learning Target: I can see patterns in behavior between parents and offspring.		Materials needed: shortening, rubber gloves, gallon baggies, bowl of ice water, rubber bands, foil. Kinetic sand in a deep container (at least 5 inches), pet rocks (Rocks, Paint, feathers, felt), heat lamp.		**Teacher Resources:**	**Supplemental Resources:**		
	Lesson 1: Phenomena of a red fox whining for its mom and look at baby animals being cared for by their parents. (Student Journal page I chose a baby)	15 mins						
	Lesson 2: Gather Read A Fawn in the Forest and fill in your writing page in the student journal. (https://docs.google.com/document/d/1-YpSuidtECNAOcxXTeISrY4UAsQmk_K2-w6Fz_JKNek/copy?usp=sharing)L	20 mins		ELA!		**Engineering Design:** 07 Don't Talk to Strangers Students learn about being safe and mimicing safe behavior (crossing the street, getting buckled in the car) from parents. *Supplies:* puppets, bandais, role-play costumes		
	Lesson 2 cont: Gather Discuss survival behaviors, draw the patterns of behavior for the swan. (Student journal page)	15 mins						
	Lesson 3: Gather/Reason Habitats, start of the Rattenbourgh adventure. (can be split into 2 lessons) (Student journal page What is a Habitat?)	30-1 hour						
	Lesson 4: Gather What is your habitat? Nature walk to find the plants and animals that live in your habitat.	30 mins						
	Lesson 4 cont: Reason/Communicate Baby animals in the arctic and the desert that look similar. (Student journal Arctic and Desert fox cubs)	30 mins						
	Lesson 5: Reason/Communicate Arctic Habitat Discuss animal adaptions, do ice bowl activity. (Student Journal Arctic Animals) Animals of the Arctic Habitat, longer story with Rattenbourgh. (Can be split into 2 parts)	30 mins						
	Lesson 6: Reason STUDENTS NEED TO BRING A PET ROCK TO CLASS. Paint the pet rock. (Student Journal Desert Animals) Have students put their pet rocks in the sand (some on top, some partly buried, some completely buried. -- Which ones will be warm? cool? (Leave the heat lamp on and return to it later in the day.)	30 mins (10 minutes to return at end of day.)		Art!		Habitat zoo		
	Lesson 7: Communicate Read about animal habitats. (Any age appropriate desert book will be fine, online links to books provided.) Animal Cards, adventure with Rattenbourough (Can be split into 2 parts.) (Do Lesson 6: Desert Animals student journal page)	30-1 hour		ELA!				
	1.3.1 The Sound of Music CANVAS 1.3.1 The Sound of Music Google Drive 1.3.1 The Sound of Music				Standard 1.3.1 Plan and carry out an investigation to show the cause and effect relationship between sound and vibrating matter. Emphasize that vibrating matter can make sound and that sound can make matter vibrate. (PS4.A)			
	Learning Target: I can investigate how vibrations create sound.		Metal hanger and string (1 per student) READ THE INSTRUCTIONS CAREFULLY IT'S VERY IMPORTANT TO TO THIS EXPERIMENT CORRECTLY. Take the string and wrap it very loosely around your fingers, hang the metal hanger from the string. PUT YOUR FINGERS INTO YOUR EARS. Gently tap the metal hanger against a surface. (If you do this correctly you will hear a LOUD watery wHoOo WHooo WHOOO sound (sound vibrations from the metal hanger to your ear)-SO COOL! If you do this incorrectly you will hear a small twang--not cool.		**Teacher Resources:**	**Supplemental Resources:**		
	Lesson 1: Phenomena and Introduction to sound, students watch a sound/vibrations video, test vibrations using a metal hanger and string.	15-30mins	Boomwhackers, jumbo straws (1 per student to make a whistle), sound sticks, rubber bands, shaker beads, paper cups (1 or 2 per student to make a shaker), toothpicks, sound maker phone, sprinkles, bowls, clear plastic wrap. Take the plastic wrap and stretch it across the top of the bowls, secure with a rubber band if needed. Sprinkle sprinkles on top of the clear wrapped bowl and hum next to the bowl-- the sprinkles will dance.			**Engineering Design:** 08 Cricket's Chirp Students use create an instrument that can create soft and loud sounds and can tell how to create each. *Supplies:* materials to make a small instrument. Dancing scarves or ribbon twirl sticks.		
	Lesson 2: Gather Exploring Pitch using glass jars, chimes, boomwhackers.	30 mins						
	Lesson 3: Gather Moving objects with sound energy, student hum to get sprinkles to move on a plastic wrapped bowl.	15 mins						
	Lesson 4: Gather Biology of the Human Ear, students draw an ear.	15 mins						
	Lesson 5/6: Reason Musical Instuments study, students create musical instruments	15 mins- 1 hour		Music!				
	Lesson 7: Reason Drums	15 mins						
	Lesson 8: Communicate Have the students build an instrument.	30 mins						
	Quarter 4							
	1.3.2 & 1.3.3 This Little Light of Mine CANVAS 1.3.2 & 1.3.3 This Little Light of Mine Google Drive 1.3.2 & 1.3.3 This Little Light of Mine				Standard 1.3.2 Use a model to show the effect of light on objects. Emphasize that objects can be seen when light is available to illuminate them or if they give off their own light. (PS4.B)			
	Learning Target: 1. I can create a model to show how light illuminates objects. 2. I can create a model to show how objects block light.		Flashlights, mirrors on popsicle sticks, foam blocks, prisms, tricolor cube, glow in the dark beads, rex lace, glow sticks, skewers, black construction paper		Standard 1.3.3 Plan and carry out an investigation to determine the effect of materials in the path of a beam of light. Emphasize that light can travel through some materials, can be reflected off some materials, and some materials block light causing shadows. Examples of materials could include clear plastic, wax paper, cardboard, or a mirror. (PS4.B)			
	Lesson 1: Phenomena Students explore a trichromic cube, how light is a source of energy. Light Color wheels, and go on a nature walk	30 mins - 1 hour			**Teacher Resources:**	**Supplemental Resources:**		
	Lesson 2: Gather Illumination study using glow sticks, study various animals/plants that glow in the dark and how they communicate using the glow (bioluminescence) (Mini video of Dory and the Anglerfish)	30 mins		Dance!		**Engineering Design:** 09 Corduroy's Adventure Students hide objects in the room and try to find them using a flashlight. *Supplies:* flashlights, small objects to hide.		
	Lesson 3: Gather How eyes work. Students draw an eye.	15 mins						
	Lesson 4: Gather/Reason Students shine a light to determine things that are transparent, opaque, or transluscent. materials study for upcoming engineering event.	15 mins				**Engineering Design:** 10 See My Shadow *Supplies:* Flashlights, things to make a simple puppet, favorite storybook to share		
	Lesson 5: Communicate Shadows, make shadow animals with your hands. Participate in Shadow theatre. (Extension activity suggestion: have students make shadow puppets and perform a nursery rhyme play.)	30 mins -1 hour		Drama!				
	Lesson 6: Communicate Laser light refraction/reflection. How lighthouses tell us a message. Explore other ways that messages are sent using light. Students build a light pattern.	30 mins-1 hour		Engineering Build!				
	Lesson 7: Extension: Prisms & Rainbows.	15 mins		Engineering Test!				
				Engineering Rebuild and Retest!				
	1.3.4 Can you hear me now? CANVAS 1.3.4 Can you hear me now? Google Drive 1.3.4 Can you hear me now?				**Standard 1.3.4** **Design a device** in which the structure of the device uses light or sound to solve the problem of communicating over a distance. Define the problem by asking questions and gathering information, convey designs through sketches, drawings, or physical models, and compare and test designs. Examples of devices could include a light source to send signals, paper-cup-and-string telephones, or a pattern of drum beats. (PS4.C, ETS1.A, ETS1.B, ETS1.C)	Constructing Explanations and Designing Solutions	Structure and Function	
	Learning Target: 1. I can create a device to show how light transmits a message.		Squishy Circuits, Modeling Clay, Playdough, Batteries		**Teacher Resources:**	**Supplemental Resources:**		
	Lesson 1: Phenomena Students watch the phenomena of the whistle language. They come up with observations and questions. They think about how they communicate.	10 mins				**Engineering Design:** 11 Can you play? Students use semphore to relay a message. *Supplies:* materials to make a flag, tape, dowel sticks, scissors		
	Lesson 2: Gather Students look at different ways that messages are communicated over a distance. They play red light/green light/yellow light.	15 mins		Music!				
	Lesson 3: Reason Students talk about communication in other ways. They come up with a way to communicate using music. They draw a rhythm and use their plan to transmit a message.	30 mins (can be split up)		Art!				
	Lesson 4: Communicate Students used squishy circuits to create a communication device. They test their design and share it with others.	30 mins - 1 hour (split this up by having kids draw the design on day one and build on a separate day. The build and test need to be on the same day because the playdough will not last multiple days.)						

SECOND GRADE STEM STORYLINES

Engineering Lessons: https://sites.google.com/provo.edu/pcsd-innovative-learning/home/teachers/integrated-stem-lessons/stem?authuser=0

Quarter	2nd SEEd Module Storylines	Approx. Pacing	Supplies needed (Every storyline requires a student journal) Most Storylines use a google slideshow, but it is not always required to use it:	Cross-Curricular Activities	Utah Core State SEEd Alignment	Science and Engineering Practice (SEP)	Cross-Cutting Standards (CC)	Disciplinary Core Ideas (DCI) codes	Assessments	Quick Links to SEEd CANVAS Modules.	Quick Links to Amy's Drive (google slides, student journal files)
	QUARTER 1									2.1.1 & 2.1.2 EARTH'S SURFACE	2.1.1 & 2.1.2 Earth's Changing Surface (Landforms)
Quarter 1	**2.1.1 & 2.1.2 Earth's Changing Surface** CANVAS 2.1.1 & 2.1.2 Earth's Changing Surface Google Drive 2.1.1 & 2.12 Earth's Changing Surface	10 mins (may combine with the next lesson)			*Standard 2.1.1* **Develop and use models** illustrating the patterns of landforms and water on Earth. Examples of models could include valleys, canyons, or floodplains and could depict water in the solid or liquid state. (ESS2.B)	Patterns	Developing and Using Models	(ESS2) Earth's Systems		2.1.3 LAND CHANGES	2.1.3 Land Changes (Quick & Slow Land Changes)
	Learning Target: 1. I can exaplin how water creates valleys, canyons and floodplains. 2. I can explain how the Earth's surface changes quickly and slowly.										2.2.1 & 2.2.2 Habitats & Animals
	Lesson 1: Phenomena Students explore phenomena of Grand Canyon Formation, mudslides, arches Students compare different landforms from a powerpoint.	30 mins			*Standard 2.1.2* **Construct an explanation** about changes in Earth's surface that happen quickly or slowly. Emphasize the contrast between fast and slow changes. Examples of fast changes could include volcanic eruptions, earthquakes, or landslides. Examples of slow changes could include the erosion of mountains or the shaping of canyons. (ESS1.C)	Stability and Change	Constructing Explanations and Designing Solutions	(ESS2) Earth's Systems			2.2.3 HAND POLLINATORS (Structure & Function of Animals/Birds)
	Lesson 2: Gather Students complete an experiment on erosion from wind. (Not ideal: but this can be a demo if short on time.)	30 mins	Raised Relief Map Shoe box (one per student or group) Supplies to make a landscape (foam, paper, glue, tape, twigs, etc) Plastic Bins Sand (if doing Castle Keepers) water paper dots (left overs from paper puncher) fan supplies to build a small house: straws, popsicle sticks, tape Handheld fans, pipettes		**Teacher Resources:**	**Supplemental Resources:**				2.2.4 BIOMIMICRY	2.2.4 Biomimicry (How Humans Mimic Nature)
	Lesson 3: Gather Students complete an experiment on erosion from water. (Not ideal: but this can be a demo if short on time.)	45 mins				**Engineering Design:** 01 Knight's Tale Engineering: empathize with a knight who's map was burned by a Dragon. Social Studies S3 O2, Art and Geography. Students create a map for a Knight to be able to find a Castle. ***Supplies:*** Art Paper Colored Pencils Pen/Markers Various maps (helpful, but not required)					2.3.1 PROPERTIES OF MATTER
	Lesson 4: Reason Students play an online game called: Don't Flood the Fidgets (Choose to skip this lesson or the one below if short on time)	45 mins									2.3.2 Building a Birdhouse (Properties of Matter influence function)
	Lesson 5: Supporting Phenomena Show the phenomena video and discuss ways to protect a house from a natural disaster.	30 mins									2.3.3 Lego Hotel (Objects can be disassembled and reshaped)
	Lesson 6: Reason Student plan and build their tower.	30 mins									2.3.4 I'm Melting (Changes in matter caused by heating & cooling)
	Lesson 7: Reason Test the towers.	30 mins		Engineering Build!							
	Lesson 8: Communicate Students rebuild their towers, test towers.	30 mins		Engineering Test!							
	Lesson 9: Communicate Finish testing drawing of their towers and answer questions online.	30 mins		Engineering Rebuild and Retest!							
	2.1.3 Land Changes CANVAS 2.1.3 Land Changes Google Drive 2.1.3 Land Changes					Stability and Change	Constructing Explanations and Designing Solutions				
	Learning Target: I can prevent erosion by using natural and manmade materials.				**Teacher Resources:**	**Supplemental Resources:**					
	Lesson 1: Phenomena Students sort a variety of cards into quick land changes or slow land changes.	30 mins			*Standard 2.1.3 Design solutions* to slow or prevent wind or water from changing the shape of land. Define the problem by asking questions and gathering information, convey designs through sketches, drawings, or physical models, and compare and test designs. Examples of solutions could include retaining walls, dikes, windbreaks, shrubs, trees, and grass to hold back wind, water, and land. (ESS2.A, ESS2.C, ETS1.A, ETS1.B, ETS1.C)	Engineering Design: 03 The Castle Keepers The Castle Keepers teacher instructions					
	Lesson 2: Gather (prior knowledge) Students engage in a classroom discussion about the quick and slow land changes and if those changes were made by water, wind or human erosion.	30 mins				***Supplies:*** 1 bag playground sand (a little more than 1.5 solo cups per group) 1 container per group (I used a small tote, tinfoil 9x13 pans work great as well) 1 solo cup per group Easy access to running water Paper, popsicle sticks, string, tissues, cotton balls, plastic bags					
	Lesson 3: Reason Students choose one of the erosion events and try to come up with ways to prevent erosion. Students can then draw a picture, write a story or otherwise tell how they would engineer a solution to prevent an erosion event from happening.	1 hour									
	Lesson 4: Gather/Reason Students look at various ways that humans can help to prevent erosion.	1 hour		Engineering Build!							
	Lesson 5: Reason Students engage in an engineering lab using soil, cups, rocks and other materials to try to determine how to prevent soil from eroding away. (IF possible, have students grow plants as part of this experiment and return to it in a few weeks after the plants have had time to grow.)	75 mins	Sand, 1 pitcher for water, pebbles, fish beads, chive seeds, pop bottles (4 minimum with sides cut out), paper cups (1 chive seed and 1 paper cup per student)	Engineering Test!							
	Lesson 6: Communicate Students look at pictures from various places around the world and try to determine what type of erosion caused that particular landform to be made. Students then use the imformation they have collected to fill in an opinion organizer and complete a short paper on erosion.	75 mins		Engineering Rebuild and Retest!		**Engineering Design:** 02 You are not Alone Engineering: empathize with a family who has been separated because of a natural disaster. Science 2.1.2, ELA, Social Studies. Students identify a cultural tradition (food, celebrating a holiday, etc.), write a letter to family telling them that you are okay and will see them soon. ***Supplies:*** Paper and Pencil (You can make the cultural tradition part more involved if wanted.)					
Quarter 2	Quarter 2										
	2.2.1 & 2.2.2 Habitats & Animals CANVAS 2.2.1 & 2.2.2 Habitats & Animals Google Drive: 2.2.1 & 2.2.2 Habitats & Animals				Standard 2.2.1						
	Learning Target: I can identify similar features in animals that live in simliar places. (i.e. Fur coats for winter animals, sharp teeth for carnivores.)				**Teacher Resources:**	**Supplemental Resources:**					
	Lesson 1: Phenomena Students investigate polar bears, they learn about why polar bears live where they do, they draw and label a polar bear, and they are introduced to the word habitat.				Obtain, evaluate, and communicate information about patterns of living things (plants and animals, including humans) in different habitats. Emphasize the diversity of living things in land and water habitats. Examples of patterns in habitats could include descriptions of temperature or precipitation and the types of plants and animals found in land habitats. (LS2.C, LS4.C, LS4.D)	**Engineering Design:** 04 From the Mountains, to the Prairies, to the Oceans Engineering: empathize with figuring out were an animal lives based on what it looks like. Science 2.2.1, Social Studies. Students pick a favorite animal they learn where that animal lives and create a picture (or a sculpture) of that animal in it's correct habitat. They place their animal in the correct location on a large map of the Earth. ***Supplies:*** colored paper, glue, other small items to make animals such as googly eyes or fluff/fur.					
	Lesson 2: Gather (Split into 3 or more lessons) Students explore different habitats around the world, they predict and guess what animals and plants live in the different habitats.		All supplies are prinatble.								
	Lesson 3: Gather They explore virtual worlds (if you have access to a VR headset, this is a good place to use it) They draw/paint an African savanna artwork.			Art!		**Engineering Design:** 05 Consider the Lilies Engineering: empathize with people who have disabilities. Science 2.2.2, Social Studies, Social Emotional Learning. Students look at different lilies to understand that even if they look different, they are still lilies. Students look at different humans-- we are all human. Students build a song together to show that everyone is an important part of the team. ***Supplies:*** pictures, song building materials (small instruments)					
	Lesson 4: Reason/Communicate They talk about structures and functions and relate them to creature powers from Wild Kratts. They complete a matching structures to functions game.										
	Lesson 5: Phenomena Students learn about the unique structure/function of camouflage.				Standard 2.2.2 Plan and carry out an investigation of the structure and function of plant and animal parts in different habitats. Emphasize how different plants and animals have different structures to survive in their habitat. Examples could include the shallow roots of a cactus in the desert or the seasonal changes in the fur coat of a wolf. (LS1.A, LS4.A, LS4.D)						
	Lesson 6: Gather They decorate a butterfly and hide it in the room. They learn how a Snowshoe Hare changes its fur color during different seasons. They are introduced to prey/predator and guess which animals are prey and which are predators.			Drama!							
	Lesson 7: Reason Students learn about the unique structure/function of animal teeth. They learn about molars, incisors and canines. They listen to a story about animal teeth and play a game of animal war.										
	Lesson 8: Communicate Students compare porcupines from around the world. They complete an animal bloom ball.										
	Lesson 9: Communicate They share their finished ball with other students and complete a Venn diagram comparing the creatures.										
	2.2.3 Hand Pollinator CANVAS 2.2.3 Hand Pollinator Google Drive: 2.2.3 Hand Pollinator				Standard 2.2.3 Develop and use a model that mimics the function of an animal dispersing seeds or pollinating plants. Examples could include plants that have seeds with hooks or barbs that attach themselves to animal fur, feathers, or human clothing, or dispersal through the wind, or consumption of fruit and the disposal of the pits or seeds. (LS2.A)						
	Learning Target: I can mimic a pollinator.				**Teacher Resources:**	**Supplemental Resources:**					
	Lesson 1: Phenomena Students watch a video of pollinators (insects, bats, birds) and make observations. Students go on a nature walk to find insects and plants.					**Engineering Design:** 06 Hand Pollinators Engineering: empathize with a girl who needs her plants pollinated. Science 2.2.3. Students created different hand pollinators and pollinate paper flowers. ***Supplies:*** Same as science lesson. This lesson is simliar to the Hand Pollinator science lesson, but with an engineering approach.					
	Lesson 2: Gather Students are asked what they think an agriculture engineer does, they draw a guessing picture in their journal. Students watch videos and read information to find out what an agriculture engineer really is, they draw a picture of a real agricultural engineer.		masking tape, erasers, test tubes, cotton balls, pom poms, pipe cleaners, Supplementary book to read: The Thing About Bees: A Love Letter								
	Lesson 3: Reason Students learn about how bees pollinate and do the bees waggle dance.			Dance!							
	Lesson 4: Communicate/Supporting Phenomena Students learn about pollen, pollinators & pollination. They hear the story of Marianna and the plant.										
	Lesson 5: Supporting Phenomena/Gather Students draw and label a flower plant, talk about pollination. They hear the rest of the story of how Marianna makes a hand pollinator.										
	Lesson 6: Gather Students get ready to make their own hand pollinator by testing various materials.			Dance!							
	Lesson 7: Reason Assign the students one of the 4 plant types or allow students to test all 4 designs.			Engineering Build!							
	Lesson 8: Reason/Communicate Students draw a design plan of a hand pollinator, they build the pollinator and test it.			Engineering Test!							
	Lesson 9: Communicate Students improve their hand pollinator design, they retest.			Engineering Rebuild and Retest!							
Quarter 3	Quarter 3										
	2.2.4 Biomimicry CANVAS 2.2.4 Biomimicry Google Drive: 2.2.4 Biomimicry				Standard 2.2.4 Design a solution to a human problem by mimicking the structure and function of plants and/or animals and how they use their external parts to help them survive, grow, and meet their needs. Define the problem by asking questions and gathering information, convey designs through sketches, drawings, or physical models, and compare and test designs. Examples could include a human wearing a jacket to mimic the fur of an animal or a webbed foot to design a better swimming fin. (LS1.A, LS1.D, ETS1.A, ETS1.B, ETS1.C)						
	Learning Target: I can solve a problem by mimicing a plant or animal.				**Teacher Resources:**	**Supplemental Resources:**					
	Lesson 1: Phenomena Students get to read (or have read to them) the book Nature did it First, they also watch the Biomimicry Song	15 mins			Students build a tiny hat for a tennis ball head.	**Engineering Design:** 07 Biomimicry Engineering: empathize with a person who is either too hot or too cold outside. Science 2.2.4. Students create a mini hat to protect someone in different types of weather using biomimicry ideas. ***Supplies:*** Same as science lesson.					
	Lesson 2: Gather Students take ideas from the book and act out different animals to show the structure/function and biomimicry.	30 mins	Nature did it first book, Wild Buildings and Bridges, Construction Paper, flet, Fabric, Laundry clips, 3x5 cards, tennis balls	Drama!							
	Lesson 3: Gather/Reason Students take matching cards and match the animals structures to the made-man biomimicry.	15 mins									
	Lesson 4: Reason students go on a nature walk and observe how different plants and animals are protected from sunlight, rain and wind.	20 mins									
	Lesson 5: Communicate Students test various materials for blocking sunlight, rain or wind.	30 mins									
	Lesson 6: Gather/Reason Students draw a design from creating a hat.	15 mins		Engineering Build!							
	Lesson 7: Reason Students build a hat and test it.	30 mins		Engineering Test!							
	Lesson 8: Communicate students improve and retest their design.	30 mins		Engineering Rebuild and Retest!							
	Lesson 9: Communicate Alternate Activity: Students build a set of butterfly wings and record how long it take the wings to float to the ground.	1 hour - can be split over multiple days		Engineering Design 2.							
	2.3.1 Properties of Matter CANVAS 2.3.1 Properties of Matter Google Drive 2.3.1 Properties of Matter			OIL, GAS & MINERAL PD from Bryce Hixson	Standard 2.3.1 Plan and carry out an investigation to classify different kinds of materials based on patterns in their observable properties. Examples could include sorting materials based on similar properties such as strength, color, flexibility, hardness, texture, or whether the materials are solids or liquids. (PS1.A)						
			Crayon molds, 1 pot, electric hotplate, wax		**Teacher Resources:**	**Supplemental Resources:**					
	Day 1: Solids, Liquids					Properites of Matter and Minerals - You will have access to this only if you attended the loose in the lab PD					
	Day 2: The way things change					**Engineering Design:** 08 Veterans and Soldiers Engineering: empathize with soldiers who defend their country. Science 2.3.1, Social Studies, Dance. Students learn how soldiers use different materials for different reasons, and how we use different materials for different landmarks or symbols (i.e. flags are fabric, statues are marble/metal etc). Students create a shield using different symbolic colors or materials. Students participate in a game (dance) where they move around the room to sort themselves based on the colors or material of their shield. ***Supplies:*** shield making meterials (cardstock, cardboard, paint or colored paper and glue sticks or tape, ribbon or other makerpace materials.)					
	Day 3: Ice Cube Investigation										
	2.3.2 Building a Birdhouse CANVAS: 2.3.2 Building a Birdhouse Google Drive: 2.3.2 Building a Birdhouse				Standard 2.3.2 Construct an explanation showing how the properties of materials influence their intended use and function. Examples could include using wood as a building material because it is lightweight and strong or the use of concrete, steel, or cotton due to their unique properties. (PS1.A)						
	Day 1: Investigate the materials needed to build a birdhouse.				**Teacher Resources:**	**Supplemental Resources:**					

SECOND GRADE STEM STORYLINES

Engineering Lessons: https://sites.google.com/provo.edu/pcsd-innovative-learning/home/teachers/integrated-stem-lessons/stem?authuser=0

Quarter	2nd SEEd Module Storylines	Approx. Pacing	Supplies needed (Every storyline requires a student journal) Most Storylines use a google slideshow, but it is not always required to use it:	Cross-Curricular Activities	Utah Core State SEEd Alignment	Science and Engineering Practice (SEP)	Cross-Cutting Standards (CC)	Disciplinary Core Ideas (DCI) codes	Assessments	Quick Links to SEEd CANVAS Modules.	Quick Links to Amy's Drive (google slides, student journal files)
	Day 2: Engineering design birdhouses in nature.		yarn, popsicle sticks plain and colored, string			**Engineering Design:** 09 Three Little Pigs Engineering: empathize with the houses of the 3 little Pigs being blown down. Science 2.3.2, ELA. Students build a gingerbread house out of the strongest material. ***Supplies:*** paperplates, gingerbread house supplies, graham crackers, frosting, candies to decorate.					
	Day 3: Design a birdhouse/bird feeder.										
	Day 4: Building a birdhouse/birdfeeder.										
Quarter 4	**Quarter 4**										
	Day 5: Testing the design.										
	Day 6: Birdwatching			PE TEACHER EVENT!							
	Day 7: Improvement of design.										
	Day 8: Final design takehome.										
	2.3.3 Lego Hotel **CANVAS 2.3.3 Lego Hotel** **Google Drive: 2.3.3 Lego Hotel**				Standard 2.3.3 Develop and use a model to describe how an object, made of a small set of pieces, can be disassembled and reshaped into a new object with a different function. Emphasize that a great variety of objects can be built from a small set of pieces. Examples of pieces could include wooden blocks or building bricks. (PS1.A)						
	Day 1: Build a Lego hotel.				**Teacher Resources:**	**Supplemental Resources:**					
	Day 2: Draw and write out your design.		Legos, Scale			**Engineering Design:** 10 Lego Hotel Engineering: empathize with a student who has left over legos at the end of a build. Science 2.3.3. Students create a lego tower and weigh it on a scale, students then recreate something using the same legos and weigh it again to see if the weight has changed. Students then take all the legos apart and weight them to see if its changed. ***Supplies:*** legos, scale to weigh legos, paper plates or cups are convinent to keep legos together but not required.					
	Day 3: Take your design apart have another student try to create your design.										
	Day 4: Compare original designs and create new things using legos.										
	2.3.4 I'm melting/Properties of Matter **CANVAS: 2.3.4 I'm melting** **Google Drive: 2.3.4 I'm melting**				Standard 2.3.4 Obtain, evaluate, and communicate information about changes in matter caused by heating or cooling. Emphasize that some changes can be reversed and some cannot. Examples of reversible changes could include freezing water or melting crayons. Examples of irreversible changes could include cooking an egg or burning wood. (PS1.B)						
	Day 1: Investigate how crayons melt and reharden. (Create a new crayon by taking apart old crayons.)		Crayon molds, 1 pot, electric hotplate, wax	ART TEACHER EVENT!	**Teacher Resources:**	**Supplemental Resources:**					
	Day 2: Draw and write out your design for creating a new crayon.		Ice cream salt, ice cream maker, heat lamp, plastic wrap.			**Engineering Design:** 11 One Step Forward Engineering: empathize with trying to figure out different road signs. Science 2.3.4, Social Studies S3 O1a. Students play a game to follow road signs (especially forward and reverse). Students look at reversible and irreversible science experiments. They test a few out to decide if they are reversible or irreversible. ***Supplies***: printed various road signs. You may pick from several experiments but some supplies include: Crayons, Heat Gun, Large Art paper, old mini muffin tin (melted crayon art experiment) Pasta Noodles, Bowl of hot water (pasta experiment) Sugar, Water, Sticks, Kitchen String, Stove food Coloring, jars (rock candy experiment) Apples, stove, pot, apple saucer machine, bowls. Spoons (apple sauce experiment) Chex, Marshmallows, pretzels, raisins, m&m's (Chex Mix Experiment)					
	Day 3: Investigate other things that change: pasta vs. boiled pasta. Boiled egg vs raw egg. origami paper vs. flat paper etc.										
	Day 4: What changes are reversible and irreversible.										

THIRD GRADE STEM STORYLINES

Engineering Lessons: https://sites.google.com/provo.edu/pcsd-innovative-learning/home/teachers/integrated-stem-lessons/stem?authuser=0

	3rd SEEd Module Storylines	Approx. Pacing	Supplies needed (Every storyline requires a student journal) Most Storylines use a google slideshow, but it is not always required to use it:	Cross-Curricular Activities	Utah Core State SEEd Alignment	Science and Engineering Practice (SEP)	Cross-Cutting Standards (CC)	Disciplinary Core Ideas (DCI) codes	Assessments	Quick Links to SEEd CANVAS Modules.	Quick Links to Amy's Drive (google slides, student journal files)
	QUARTER 1									3.1.1, 3.1.2 & 3.1.3 Weather and Climate Patterns	3.1.1, 3.1.2 & 3.1.3 Weather and Climate Patterns
Quarter 1	**3.3.1 Force Affect Motion/May the Force be with you** CANVAS 3.3.1 Force Affects Motion Google Drive 3.3.1 Force Affects Motion				*Standard 3.3.1* **Plan and carry out investigations** that provide evidence of the effects of balanced and unbalanced forces on the motion of an object. Emphasize investigations where only one variable is tested at a time. Examples could include an unbalanced force on one side of a ball causing it to move and balanced forces pushing on a box from both sides producing no movement. (PS2.A, PS2.B)	Cause and Effect	Planning and Carrying out investigations	(PS2) Motions and Stability: Forces and Interactions			3.2.1 Circle of Life (Life Cycles)
	Learning Target: I can determine how an object will move with balanced and unbalanced forces.		foam boards, toy cars, modeling clay, sclae, 3x5 cards, paperclips		**Teacher Resources:**	**Supplemental Resources:**					3.2.2 Oh I just can't wait to be King! (Inherited Traits)
	Lesson 1: Phenomena Explore the phenomena of dominoes and pythagora switch(rube goldberg mazes) Students determine which forces exert a greater force.	30 mins			Engineering Design: 10 May the Force be With You			(PS3) Energy			3.2.3 Slimy, Yet Satisfying! (Environments affect traits)
	Lesson 2: Gather Students complete May the Force be with you. Students test a car going down a ramp to see how far it travels.	30 mins			***Supplies:***	straw rockets					3.2.4 Be Prepared (How traits help survival)
	Lesson 3: Reason May the Force be with you lab. Students will modify one thing about the ramp setup to make the car go further.	30 mins			Piece of Cardboard, foamboard, flat cookie sheet - anything flat that you can roll a car down Wooden blocks (to hold up ramp) Painters tape (to mark distance) Meter stick Marker Small Cars Large table or a slick floor (the larger and wider the better) 3 x 5 card (draw Mudhorn on it) Modeling clay or playdough (optional) Digital scale (optional)	pool noodle marble run					3.2.5 & 3.2.6 Remember Who You Are (How an ecosystem works together to support survival & changes in an environment)
	Lesson 4: Communicate Students determine the differences between balanced and unbalanced forces using online games.	30 mins								3.3.1 Force Affects Motion	3.3.1 Force Affects Motion
	3.3.2 Predicting Motion CANVAS 3.3.2 Predicting Motion Google Drive 3.3.2 Predicting Motion				*Standard 3.3.2* **Analyze and interpret data** from observations and measurements of an object's motion to identify patterns in its motion that can be used to predict future motion. Examples of motion with a predictable pattern could include a child swinging on a swing or a ball rolling down a ramp. (PS2.A, PS2.C)	Patterns	Analyzing and Interpreting Data	(PS2) Motions and Stability: Forces and Interactions		3.3.2 Predicting Motion	3.3.2 Predicting Motion
	Learning Target: I can predict how an object will move based on the patterns of motion I see.		spirographs, motor and motor holders, plastic cups, pipe cleaners, mixed motors for scribble bots, popsicle sticks, rope, ping-pong balls		**Teacher Resources:**	**Supplemental Resources:**				3.3.3 Gravity!	3.3.3 Gravity!
	Lesson 1: Phenomena Students look at a swinging pendulum, swings and complete an experiment on bouncing balls. Students explore the motion of birds in flight, raindrops in water. They explore predicatable patterns in nature and try to determine ways that they can repeat the motions.	30 mins		DANCE or PE TEACHER EVENT!	Engineering Design: 09 Braving the Bridge ***Supplies:*** 3x5 cards Pennies Tape Ruler Set of blocks					3.3.4 A Day at the Races	3.3.4 A Day at the Races (Magnetic & Electric Interactions)
	Lesson 2: Gather Student conduct experiments on playground equipment.	30 mins								3.3.5 Maglev Trains	3.3.5 Maglev trains
	Lesson 3: Reason/Communicate Students create Scribble Bots.	1 hour			Engineering Design: 11 Scribbler/Scrubber Bots ***Supplies:*** For Demo: Toys that move, light up or play sound. For Zentangle: watercolor (preferred) can use colored pencil or crayons, pens, art paper. For Scribbler/Scrubber Bots 1.5 DC Motor Kit AA battery and AA Battery Holder Roll of masking tape (share between groups) Pink eraser (they will eventually become small bits of eraser) Cups 2-3 Pipe cleaners 3-4 pencils 2-3 Paper clips 2-3 Rubber bands 2-3 drinking straws 3-4 popsicle sticks Small pieces of sponge Scissors String Markers For supplemental: paint, marbles, box lid, art paper, string, cups, cardboard to make a small pendelum tower.						
	Lesson 4: Communicate Students test and observe other groups scribble bots.	30 min-1 hour									
	Alternate activity: Students create drawings on the ground using a drip bucket and water. (could also do this with Spirographs if available)	this is alternate to the above activity									
	3.3.3 Gravity! CANVAS 3.3.3 Gravity! Google Drive 3.3.3 Gravity!				*Standard 3.3.3* **Construct an explanation** that the gravitational force exerted by Earth causes objects to be directed downward, toward the center of the spherical Earth. Emphasize that "downward" is a local description depending on one's position on Earth. (PS2.B)	Cause & Effect	Constructing Explanations and Designing Solutions	(PS2) Motions and Stability: Forces and Interactions			
	Learning Target: I can explain that all objects fall towards Earth.		paper for helicopter, paperclips, box of various supplies to make a small Rube Goldberg reaction (toy cars, ramps, paper, blocks, books)		**Teacher Resources:**	**Supplemental Resources:**					
	Lesson 1: Phenomena Students watch a video about gravity and design a way to visit the moon or another planet.	30mins			Engineering Design: 04 Too Many Pumpkins ***Supplies:***						
	Lesson 2: Gather Students will design paper helicopters to try to find the best flyers that use gravity	30 mins		Engineering Build!	This experiment uses the engineering fair guidelines to complete.						
	Lesson 3: Reason Students will design a Rube Goldberg device that mainly uses gravity to complete a task. (Alternate activity: Engineering a Rollercoaster. There are several apps online that have students build and test a rollercoaster. I did not include any of the links in a lesson because flash is not supported after Dec 2020. If I find a better alternative I will add a lesson here. If you have one, send it my way! Thank you.)	45 mins		Engineering Test!							
	Lesson 4: Communicate Students re-build their Rube Goldberg device and do a final test.	45 mins		Engineering Rebuild and Retest!							
	3.3.4 A Day at the Races CANVAS 3.3.4 A Day at the Races Google Drive 3.3.4 A Day at the Races	5-10 mins			*Standard 3.3.4* **Ask questions to plan and carry out an investigation** to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other. Emphasize how static electricity and magnets can cause objects to move without touching. Examples could include the force an electrically charged balloon has on hair, how magnet orientation affects the direction of a force, or how distance between objects affects the strength of a force. Electrical charges and magnetic fields will be taught in Grades 6 through 8. (PS2.B)						
	Learning Target: I can investigate cause and effect between magnetic and non-magnetic objects.		Styrofoam plates large and small, balloons, microfiber cloth, bubbles, compasses, bag of magnetic chips, energy rod, plastic trays, rabbit furs, magnet wands, magnetic boxes, bar magnets, anti gravity kits.		**Teacher Resources:**	**Supplemental Resources:**					
	Lesson 1: Phenomena Students explore the phenomena of static electricity and magnets. (Video provided, this can be a teacher demo). A series of mini (rotation) labs for students to explore static electricity 1. Balloons and hair 2. floating styrofoam 3. static tubes 4. moving water 5. Moving Balloons with charged electrostatic rods.	30-40 mins			Engineering Design: 12 Straw Rockets ***Supplies:***						
	Lesson 2: Gather Students participate in a race using aluminum cans, PVC pipe, cloth.-- Static electricity can races. (Alternate activity provided: Students participate in a race using bubbles.)	30 mins									
	Lesson 3: Reason/Communicate A study of how Cochlear implants are affected by static electricity and students create/design/engineer a playground that can be used by kids with cochlear implants.	30 mins									
	Lesson 4: Phenomena/Gather (setup of next set of lessons) Students explore the interaction of magnetic hovering ability (mag tracks available for check out from the district office and will also be used in the next set of lessons.)	20-30 mins									
Quarter 2	Quarter 2										
	3.3.5 Maglev Trains CANVAS 3.3.5 Maglev Trains Google Drive 3.3.5 Maglev Trains				*Standard 3.3.5* **Design a solution to a problem** in which a device functions by using scientific ideas about magnets. Define the problem, identify criteria and constraints, develop possible solutions using models, analyze data from testing solutions, and propose modifications for optimizing a solution. Examples could include a latch or lock used to keep a door shut or a device to keep two moving objects from touching each other. (PS2.B, ETS1.A, ETS1.B, ETS1.C)						
	The following lessons are similar. Students are meant finish Episode 1 and then choose ONE of the following episodes (episode 2, 3, or 4) below to complete, or you can decide which lesson your class will test together. Episode 2 and Episode 4 are the best of the three provided engineering design lessons. Episode 2 is the easiest to complete, if you are short on time. I suggest that the lesson is split like this: Day 1: ~40 mins Introduction and first design Day 2: ~40 mins test of design Day 3: ~40 mins re-design Day 4: 30 mins test of re-design Supplies (have been placed at all schools except Amelia & Rock Canyon) and tracks are available from the district office.			Engineering Build!	**Teacher Resources:**	**Supplemental Resources:**					
	Learning Target: I can design a maglev train to test the ability of magnets.		Square magnets, tape, wooden block template for cars, 3x5 cards, leftover cereal boxes, scissors, things to decorated the 'maglev train' markers-pens-pom poms, ping pong balls (for train passengers), pipe cleaners, rubber bands, cardstock		Engineering Design: 16 MAGLEV Trains ***Supplies:***						
	Lesson 1: Phenomena Intro to Maglev trains, video and brainstorm activity.	~10 mins		Engineering Test!							
	Lesson 2: Gather Students test various magnetic properties in a series of mini experiments. (This can be split into multiple days.)	30 mins - 1 hour		Engineering Rebuild and Retest!							
	Lesson 3: Reason/Communicate (This lesson portion has 3 options. 1 is the easiest for 3rd grade, but 2 is the most fun for the students, 3 is meant for more advanced students. But you can choose to do all 3 if you wish.) Option 1. Students design and test a Maglev train that can go the fastest down a track. Option 2. Students design and test a Maglev train that safely transports passengers. Option 3. Students design and test a Maglev train that can make the train arrive at the correct time.	~2 hours (If you do all three)	IF YOUR SCHOOL DOESN'T HAVE THEM: You will need to check out a MAGLEV Track (I suggest checking out 2 minimum with a MAGLEV coupler								
	3.3.5 Solving Problems with Magnets **CANVAS 3.3.5 Solving Problems with Magnets** Google Drive 3.3.5 Solving Problems with Magnets				*Standard 3.3.5* **Design a solution to a problem** in which a device functions by using scientific ideas about magnets. Define the problem, identify criteria and constraints, develop possible solutions using models, analyze data from testing solutions, and propose modifications for optimizing a solution. Examples could include a latch or lock used to keep a door shut or a device to keep two moving objects from touching each other. (PS2.B, ETS1.A, ETS1.B, ETS1.C)						
			Styrofoam plates large and small, balloons, microfiber cloth, bubbles, compasses, bag of magnetic chips, energy rod, plastic trays, rabbit furs, magnet wands, magnetic boxes, bar magnets, anti gravity kits.		**Teacher Resources:**	**Supplemental Resources:**					
	3.2.1 Circle of Life CANVAS 3.2.1 Circle of Life Google Drive 3.2.1 Circle of Life				Standard 3.2.1 Develop and use models to describe changes that organisms go through during their life cycles. Emphasize that organisms have unique and diverse life cycles but follow a pattern of birth, growth, reproduction, and death. Examples of changes in life cycles could include how some plants and animals look different at different stages of life or how other plants and animals only appear to change size in their life. (LS1.B)						
	Learning Target: I can make a model to different life cycles.				**Teacher Resources:**	**Supplemental Resources:**					
	Episode 1: Phenomena Students observe life, they look at life cycles of a lion, they draw and discuss human life cycles. They watch life cycles from a butterfly and moth. They pick a butterfly/moth to draw a lifecycle. (butterfly and moth cards are provided, but students will need to research what the egg/caterpillar/pupa looks like). Students guess what the life cycle of a jellyfish involves- then learn about it.			Dance!							
	Episode 2: Gather Students sort cards into a life cycle, they read about and discover the life cycles of frogs and salmon. They then choose and animal to research and create a life cycle of an animal, the option to fill in blank cards for the animal life cycle is provided. Students share and discuss findings.										
	Episode 3: Reason Students explore life cycles of plants. They create a flipbook for a growing plant. They read an article on tulips.										
	Episode 4: Communicate Students learn how seasonal changes are different from life cycles. They compare and contrast them. A summative assessment has also been provided.										
	3.2.2 Inherited Traits (Oh, I just can't wait to be King!) CANVAS 3.2.2 Inherited Traits (Oh, I just can't wait to be King!) Google Drive 3.2.2 Inherited Traits (Oh, I just can't wait to be King!)				Standard 3.2.2 Analyze and interpret data to identify patterns of traits that plants and animals have inherited from parents. Emphasize the similarities and differences in traits between parent organisms and offspring and variation of traits in groups of similar organisms. (LS3.A, LS3.B)						
	Learning Target: I can identify inherited traits by looking at patterns in offspring.		Dormant brine shrimp, hand lenses, petric dishes		**Teacher Resources:**	**Supplemental Resources:**					

THIRD GRADE STEM STORYLINES

Engineering Lessons: https://sites.google.com/provo.edu/pcsd-innovative-learning/home/teachers/integrated-stem-lessons/stem?authuser=0

					Engineering Design: 05 My Family are Aliens **Supplies:**			
	Episode 1: Phenomena Students explore a picture with kittens, they play inherited traits bingo with their class, they determined traits that have been inherited from the the mom cat to the kittens. They are given the vocabulary words of trait, inherited, parent and offspring.							
	Episode 2: Gather Students look at horses, they learn about a pair of black and white twins, they learn about a horse named Paint and color in Paint's family tree.			Art!				
	Episode 3: Reason Students learn about apples, they try to guess what fruits and vegetables used to look like. They test out 4 different types of apples.			Art!				
	Communicate (assessment provided) 2 different summative assessments have been provided: Parents of a Puppy and Tulips							
	Quarter 3							
Quarter 3	**3.2.3 & 3.2.4 Environments Affect Traits/How Traits help survival** **CANVAS 3.2.3 & 3.2.4 Environments Affect Traits/How Traits help survival** **Google Drive 3.2.3 & 3.2.4 Environments Affect Traits/How traits help survival**				Standard 3.2.3 Construct an explanation that the environment can affect the traits of an organism. Examples could include that the growth of normally tall plants is stunted with insufficient water or that pets given too much food and little exercise may become overweight. (LS3.B)			
			Packet of pea seeds, paper cups, soil, gloves, water, graduated Cylinders, plastic Spoons		Standard 3.2.4 Construct an explanation showing how variations in traits and behaviors can affect the ability of an individual to survive and reproduce. Examples of traits could include large thorns protecting a plant from being eaten or strong smelling flowers to attracting certain pollinators. Examples of behaviors could include animals living in groups for protection or migrating to find more food. (LS2.D, LS4.B)			
					Teacher Resources:	**Supplemental Resources:**		
					Engineering Design: 06 In the Limelight **Supplies:**			
					Engineering Design: 07 The Next Ninja Warrior **Supplies:**			
	3.2.5 & 3.2.6 Ecosystmes in Extreme Environments **CANVAS 3.2.5 & 3.2.6 Ecosystmes in Extreme Environments** **Google Drive 3.2.5 & 3.2.6 Ecosystems in Extreme Environments**				Standard 3.2.5 Engage in argument from evidence that in a particular habitat (system) some organisms can survive well, some survive less well, and some cannot survive at all. Emphasize that organisms and habitats form systems in which the parts depend upon each other. Examples of evidence could include needs and characteristics of the organisms and habitats involved such as cacti growing in dry, sandy soil but not surviving in wet, saturated soil. (LS4.C)			
					Teacher Resources:	**Supplemental Resources:**		
	3.2.6 Noise Pollution **CANVAS 3.2.6 Noise Pollution** **Google Drive 3.2.6 Noise Pollution**				Standard 3.2.6 Design a solution to a problem caused by a change in the environment that impacts the types of plants and animals living in that environment. Define the problem, identify criteria and constraints, and develop possible solutions. Examples of environmental changes could include changes in land use, water availability, temperature, food, or changes caused by other organisms. (LS2.C, LS4.D, ETS1.A, ETS1.B, ETS1.C)			
					Teacher Resources:	**Supplemental Resources:**		
	Quarter 4							
Quarter 4	**3.1.1, 3.1.2 & 3.1.3 Weather and Climate Patterns** **CANVAS 3.1.1 3.1.2 & 3.1.3 Weather and Climate Patterns** **Google Slides: 3.1.1, 3.1.2 & 3.1.3 Weather and Climate Patterns**				***Standard 3.1.1*** **Analyze and interpret data** to reveal patterns that indicate typical weather conditions expected during a particular season. Emphasize students gathering data in a variety of ways and representing data in tables and graphs. Examples of data could include temperature, precipitation, or wind speed. (ESS2.D)	Patterns	Analyzing and Interpreting Data	(ESS2) Earth's Systems
	Learning Target: I can find patterns in typical weather conditions.				**Teacher Resources:**	**Supplemental Resources:**		
	Episode 1: Phenomena Explore phenomena of unusual ot unexpected weather.	30 mins			Engineering Design: 01 Windy Windsocks **Supplies:**			
	Episode 2: Gather Students create a graph using weather data. Graph using the full sheet of data. (TEACH with Module 18: into Math OR for DLI: Lesson 7.1: Read Picture Graphs and Bar graphs)	30 mins						
	Episode 3: Gather Students create a graph using weather data. Graph using the scaled picture graphs. (TEACH with Module 18: into Math OR for DLI: Lesson 7.1: Read Picture Graphs and Bar graphs)	30 mins		MATH EVENT!				
					Standard 3.1.2 **Obtain and communicate information** to describe climate patterns in different regions of the world. Emphasize how climate patterns can be used to predict typical weather conditions. Examples of climate patterns could be average seasonal temperature and average seasonal precipitation. (ESS2.D)			
	Episode 4: Gather Students look up weather data using the internet to determine the climate of various places on Earth (Part one ask questions about the Earth and set up the students on the computers.)	1 hour (this can be split up and made shorter if needed.)	3x5 cards, popsicle sticks, straws, fans, tissue paper, masking tape, string, salt		Engineering Design: 02 Raindance **Supplies:**	Patterns	Obtaining, Evaluating and Communicating Information	(ESS2) Earth's Systems
	Episode 5: Gather Students look up weather data using the internet to determine the climate of various places on Earth (Students complete the computer work they started the day before.)	1 hour (this can be split up and made shorter if needed.)			**Teacher Resources:**	**Supplemental Resources:**		
	Episode 6: Reason Students play an online game called Don't Flood the Fidgets (Skip this activity or the next one if short on time.)	30 mins			***Standard 3.1.3*** **Design a solution** that reduces the effects of a weather-related hazard. Define the problem, identify criteria and constraints, develop possible solutions, analyze data from testing solutions, and propose modifications for optimizing a solution. Examples could include barriers to prevent flooding or wind-resistant roofs. (ESS3.B, ETS1.A, ETS1.B, ETS1.C)	Cause and Effect	Constructing Explanations and Designing Solutions	(ESS3) Earth and Human Activity, (ETS1.A) Defining and Delimiting an Engineering Problem (ETS1.B) Developing Possible Solutions (ETS1.C) Optimizing the Design Solution
	Episode 7: Reason Students design a barrier to prevent a house from the effects of a hurricane. Students draw and plan their barrier design.	30 mins		Engineering Build!	Engineering Design: 03 Levee Me **Supplies:**			
	Episode 8: Reason/Communicate Students design a barrier to prevent a house from the effects of a hurricane. Students build their barriers.	30 mins		Engineering Test!				
	Episode 9: Reason/Communicate Students design a barrier to prevent a house from the effects of a hurricane. Students test their barriers.	30 mins		Engineering Rebuild and Retest!				
	Episode 10: Reason/Communicate Students design a barrier to prevent a house from the effects of a hurricane. Students rebuild their barriers and test them.	30 mins						
	Episode 11: Communicate Students design a barrier to prevent a house from the effects of a hurricane. Students answer questions regarding their barriers and results.	30 mins						

FOURTH GRADE STEM STORYLINES

Engineering Lessons: https://sites.google.com/provo.edu/pcsd-innovative-learning/home/teachers/integrated-stem-lessons/stem?authuser=0

4th SEEd Module Storylines	Approx. Pacing	Supplies needed (Every storyline requires a student journal) Most Storylines use a google slideshow, but it is not always required	Cross-Curricular Activities	Utah Core State SEEd Alignment	Science and Engineering Practice (SEP)	Cross-Cutting Standards (CC)	Disciplinary Core Ideas (DCI) codes	Assessments
QUARTER 1								
4.1.1 Organisms Structures & Functions CANVAS 4.1.1 Organisms Structures & Functions Google Drive: 4.1.1 Organisms Structures & Functions				***Standard 4.1.1*** **Construct an explanation** from evidence that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. Emphasize how structures support an organism's survival in its environment and how internal and external structures of plants and animals vary within the same and across multiple Utah environments. Examples of structures could include thorns on a stem to prevent predation or gills on a fish to allow it to breathe underwater. (LS1.A)	Constructing Explanations and Designing Solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems. · Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution.	Structure and Function: A system can be described in terms of its components and their interactions.	LS1.A: Structure and Function Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction.	
Learning Target: I can determine the function of different structures on an organism.				**Teacher Resources:**	**Supplemental Resources:**			
Episode 1: Phenomena Explore the phenomena of a plant recieving water and reviving. Students draw a flower and label all the parts, class discussion about the structure and function of all the parts of a flower.	30 mins	Crayons or colored pencils, animal dice (printed and made) head, tail, limbs, body cards (printed, laminated) Optional: plant, pinecones and water	Dance! The Blind Shrew Dance		Engineering Design: 01 Bird Beaks Supplies: Paperclips, marbles, toothpicks, timer kebab sticks, straws, binderclips supplies to build a bird beak: popsicle sticks, paper, tape,	Art Lesson: 4.1.1 & 4.1.2 Bioluminescent Fish ***Supplies:*** Art Paper Markers Flourescent Paint Paint Brushes Black Light		
Episode 2: Students explore animals and their functions. They play a game using animal dice to look at structure from various Utah animals.	30-45 mins							
Episode 3: Students observe a pinecone and explain the structure and function of the pine tree. They look at more detail in how the plant grows, survives and reproduces.	15-30 mins							
Episode 4: Students observe fish breathing underwater. They look at unique function from various animals and read about animals in more detail. They determine how animals grow, surivive and have offspring (reproduce).	30 mins							
Episode 5: Students observe plants from Utah they find patterns in their structures and functions (i.e. Evergreens grow in cold places. Broad leafy plants prefer warm places.)	30 mins							
Episode 6: Students look at imaginary creatures to determine where they might live based on their structures and function. Students discuss what environmental factors that affect plants and animals. Students create (draw) an imaginary creature and describes why that creature's structure and function allows it to live where it does.	30-45 min		Drama! Act out animals with different strucures & functions					
Episode 7: Students explore plants in their neighborhood by completing a plant collection. They sort what they found by type (leaf, twig, seed) , they determine the functon of that structure. As a final assessment, they pick a plant to draw an label. (create a model)	30 mins		Art! Pressing Leaves					
4.1.2 Memory Systems (How Animals Respond) CANVAS 4.1.2 Memory Systems (How Animals Respond) Google Drive 4.1.2 Memory Systems (How Animals Respond)				Standard 4.1.2 ***Develop and use a model*** of a system to describe how animals receive different types of information from their environment through their senses, process the information in their brain, and respond to the information. Emphasize how animals are able to use their perceptions and memories to guide their actions. Examples could include models that explain how animals sense and then respond to different aspects of their environment such as sounds, temperature, or smell. (LS1.D)	Developing and Using Models: Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions. Develop a model using an example to describe a scientific principle.	Systems and System Models: A system can be described in terms of its components and their interactions.	LS1.D: Information Processing Different sense receptors are specialized for particular kinds of information, which may be then processed by the animal's brain. Animals are able to use their perceptions and memories to guide their actions.	
Learning Target: I can create a model for teaching an animal a skill based on positive or negative stimuli.				**Teacher Resources:**	**Supplemental Resources:**			
Episode 1: Phenomena Explore the Phenomena of a monkey warning other animals that a lion is coming.	30 mins				Engineering Design: 02 Hotel Honeycomb ***Supplies:*** 1 sheet of graph paper per group Timer Paper Tape Scissors 1 Hotel Honeycomb Activity Worksheet per group (optional) Pipe cleaners (optional) Colored pencils (optional) 1" Hexagon template paper (optional) 1 ½" Hexagon template paper (optional) 2" Hexagon template paper (optional)			
Episode 2: Explore the Phenomena of an elephant detecting an Earthquake.	30 mins							
Episode 3: Compare Humans eating something sweet and something sour.	20 min							
Episode 4: Students complete a animal organizer using a bookmark. (Alternate activity provided: Students walk around finding different animals to put on their animal bingo card, they will need to read about how the animal interacts in it's environment. During bingo the teacher only gives clues for how the animal interacts in their environment. Students will have to determine which animal the teacher is talking about in order to mark it off on their bingo card.)	40 mins	Animal bookmarks printed in color, cut and laminated Dice (1 per student or 1 per team if doing teams) Colored pencils or crayons Sweet Candy (1 piece per student) Sour Candy (1 piece per student)						
Episode 5: Students explore how animals are trained.	30 mins		Art! Draw and color your dragon					
Lesson 4: How to Train your Dragon. Students determine features using a regular dice for their own pet Dragon and draw it. How to Train your Dragon. Students use the features that their Dragon has to determine how their dragon would respond to an Environmental Stimuli/Event and use that response to train their dragon.	30 -45 mins							
4.1.3 Oh Fossil, Where are you? CANVAS 4.1.3 Oh Fossil, Where are you? Google Drive 4.1.3 Oh Fossil, Where are you?				***Standard 4.1.3*** **Analyze and interpret data** from fossils to provide evidence of the stability and change in organisms and environments from long ago. Emphasize using the structures of fossils to make inferences about ancient organisms. Examples of fossils and environments could include comparing a trilobite with a horseshoe crab in an ocean environment or using a fossil footprint to determine the size of a dinosaur. (LS4.A)	Analyzing and Interpreting Data	Stability and Change	(LS4) Biological Evolution	
Learning Target: I can look at fossils to find evidence of changes in organisms and environments.			Art! Make a fossil imprint/mold	**Teacher Resources:**	**Supplemental Resources:**			
Episode 1: Students look at fossils on the top of a mountain. Students go on a fossil hunt. Students are given a series of fossil cards to match to their relative living creatures and compare structures from both.	40 min				Engineering Design: 03 Oh Fossil, My Fossil ***Supplies:*** Printed copies of the fossil puzzles scissors glue paper for dinosaur puzzle background paper/pencil for student to write a story.	Field Trip: Thanksgiving Point Museum Scavenger Hunt Can't go on a real field trip? If you scroll to the middle of this page you will find a virtual 3D walk through, students can click to view it full page and virtually walk through the entire museum. ***Supplies:*** Computers (1 per student) scavenger booklet scissors tape colored pencils		
Episode 2: Students play a game using pictures of fossils or living creatures taped to their back (or forehead). They match the living images to the fossil images and compare modern and past creatures.	40 min	Printed and laminated fossil cards (for fossil hunt) used in Episode 1 and 5 Printed dead and alive cards for Episode 2 game Optional: real fossils to look at Colored pencils						
Episode 3: Students look at modern/present environments of fossils from around the world.	40 min							
Episode 4: Students look at Utah specifically to determine the past environment in Utah and how it has changed.	40 min							
Episode 5: Students create a fossil information card and determine how the environment changed around the world.	40 min		Art! Fossil Cards					
4.1.4 Call to Order/Rock Layers CANVAS 4.1.4 Call to Order/Rock Layers Google Drive 4.1.4 Call to Order/Rock Layers				***Standard 4.1.4*** **Engage in argument** from evidence based on patterns in rock layers and fossils found in those layers to support an explanation that environments have changed over time. Emphasize the relationship between fossils and past environments. Examples could include tropical plant fossils found in Arctic areas and rock layers with marine shell fossils found above rock layers with land plant fossils. (ESS1.C)	Patterns	Engaging in Arguments from Evidence	(ESS1) Earth's Place in the Universe	
Overall Learning Target: I can use patterns of rock formations to determine how environments change over time.				**Teacher Resources:**	**Supplemental Resources:**			
Episode 1: I can observe rocks in layers and determine which layers are older or younger. Students look at patterns in rocks from around the world. They compare rock layers to layers of a cake.	30 mins	Optional: a layered cake to serve to students (plates, forks) Fossils Colored pencils paper Printed Call to Order Activity with lithology symbols Computer (if doing virtual fieldtrip) Sand Jar Art Sandart Pipettes	Art! Rock Patterns.		Engineering Design: 04 Heigh Ho, Home from work we go! ***Supplies:***	Art Lesson: Rock Layers Watercolor Art ***Supplies:*** Watercolor paper (2 sheets per student) water colors paint brushes cups water glue		
Episode 2: I can explain how sedimentary rocks form and how fossils in sedimentary rocks can tell us about past environments. Students look at lithology symbols and determine how rock layers are decided. They play a game to solve a layers of rock puzzle with a teammate. Students draw their own rock layer set using the lithograph patterns and various fossils of their choice. Students write a narrative to go along with the rock layers. (Call to Order Activity)	30 mins							
Episode 3: I can argue using evidence to determine what type of creature a fossil would have been and where it may have lived. Students go on a virtual fieldtrip/hike: Go on a virtual hike: https://www.nps.gov/zion/learn/photosmultimedia/virtual-hikes.htm	1 hour (can be split into 2 days)							
Episode 4: I can determine which rocks are older or younger based on where they are found. Students look at a section of rock and determine the approx. ages of each layer.								
Episode 5: I can determine that the Earth looks similar today as it did in the past and will continue to look the same in the future. Students compare modern images of Earth and discuss what Earth will look like in the future and what it looked like in the past.								
Quarter 2								
4.2.1 Take me out to the Ball Game! (Energy transfer: Cause & Effect CANVAS: 4.2.1 Take me out to the Ball Game! (Energy transfer: Cause & Effec t Google Drive 4.2.1 Take me out to the Ball Game! (Energy transfer: Cause & Effect)				Standard 4.2.1 Construct an explanation to describe the cause and effect relationship between the speed of an object and the energy of that object. Emphasize using qualitative descriptions of the relationship between speed and energy like fast, slow, strong, or weak. An example could include a ball that is kicked hard has more energy and travels a greater distance than a ball that is kicked softly. (PS3.A)	Cause & Effect	Constructing Explanations and Designing Solutions	(PS3) Energy	
Learning Target: I can explain how the speed of an object effects and/or causes it to have energy.				**Teacher Resources:**	**Supplemental Resources:**			
Lesson 1: Phenomena Students watch a video of ball interactions and trebuchets.	20	marbles, towel, hand towels, rubber bands, cubes, classroom balls, pit balls, ping pong balls, meter sticks	Dance! Show the interactions of objects in motion. How do you change your motion?		Engineering Design: 05 All the Colors of the Wind ***Supplies:***			
Lesson 2: Gather Students conduct a series of experiments using playground equipment.	1 hour (or less)							
Lesson 3: Reason/Communicate Students conduct experiments using a rubber band to propel a paper cube forward.	1 hour (or less)							
4.2.2 Take me out with the crowd (Energy Transfer: Collisions) CANVAS 4.2.2 Take me out with the crowd (Energy Transfer: Collisions) Google Drive 4.2.2 Take me out with the crowd (Energy Transfer: Collisions)				Standard 4.2.2 Ask questions and make observations about the changes in energy that occur when objects collide. Emphasize that energy is transferred when objects collide and may be converted to different forms of energy. Examples could include changes in speed when one moving ball collides with another or the transfer of energy when a toy car hits a wall. (PS3.B, PS3.C)	Stability and Change	Asking Questions & Defining Problems	(PS3) Energy	
Learning Target: I can explain the motion of objects colliding by making observations and asking questions.			Drama! Act out motions of colliding objects.	**Teacher Resources:**	**Supplemental Resources:**			
Lesson 1: Phenomena Student watch a video with a series slow motion lego collisions. They write down observations and other words associated with crashing.	30 mins							
Lesson 2: Gather Students test marbles in a series of collisions.	30 mins	marbles, towel, hand towels, rubber bands, cubes, classroom balls, pit balls, ping pong balls, meter sticks			Engineering Design: 06 Blanket Fort! ***Supplies:***			
Lesson 3: Reason Students study the concepts of Newton's 1st Law, Kinetic Energy and Inertia	30 mins							
Lesson 4: Communicate Students experiment with different objects colliding and create a series of models to explain the motions caused by the collisions.	1 hour (can be split into 2 days)							
4.2.3 Buy me some Peanuts & Crackerjacks (Energy Transfer: Sound, Heat) CANVAS 4.2.3 Buy me some Peanuts & Crackerjacks (Energy Transfter: Sound, Heat) Google Drive 4.2.3 Buy me some Peanuts and Crackerjacks (Energy Transfer: Sound, Heat)				Standard 4.2.3 Plan and carry out an investigation to gather evidence from observations that energy can be transferred from place to place by sound, light, heat, and electrical currents. Examples could include sound causing objects to vibrate and electric currents being used to produce motion or light. (PS3.A, PS3.B)	Energy and Matter	Planning and Carrying out Investigations	(PS3) Energy	
Learning Target: I can investigate energy transferring from place to place by sound, light, heat and electric currents.		x-acto knifes, foil, platic wrap, packing tape, students need to bring in a box to create a solar oven.		**Teacher Resources:**	**Supplemental Resources:**			
Lesson 1: Phenomena. Use a popcorn maker in class and serve popcorn-- class discussion about transfer of energy in ways other than balls bouncing.	30 mins				Engineering Design: 07 Alarming ***Supplies:***			
Lesson 2: Gather A series of exploratory station experiments in which students identify the transfer of energy from each. (Stations include: 1. Space Phones OR Slinky's, 2. Hand Boiler, 3. Newton's Cradle, 4. Fiber Optic Light, 5. Spiky Ball 6. Whirly Tube	1 hour (or less)							
Lesson 3: Gather A series of exploratory station experiments in which students identify the transfer of energy from each. (Stations include: 1. Space Phones OR Slinky's, 2. Hand Boiler, 3. Newton's Cradle, 4. Fiber Optic Light, 5. Spiky Ball 6. Whirly Tube	1 hour (or less)							
Lesson 4: Reason Students evaluate energy transfers that they experience in their world.	15 min	1 popcorn maker, paper bowls, optic light, hand boilers, spiky balls, slinky phone, whistle tubes, pit balls, ping-pong balls.	Engineering Build!	Standard 4.2.3 Plan and carry out an investigation to gather evidence from observations that energy can be transferred from place to place by sound, light, heat, and electrical currents. Examples could include sound causing objects to vibrate and electric currents being used to produce motion or light. (PS3.A, PS3.B)	Energy and Matter	Constructing Explanations and Designing Solutions	(PS3) Energy (ETS1.A) Defining and Delimiting an Engineering Problem (ETS1.B) Developing Possible Solutions (ETS1.C) Optimizing the Design Solution	
Lesson 5: Reason Students design solar ovens, talk about worldwide data on fuel sources.	45 mins		Engineering Test!	Helper links for the Solar Ovens: https://www.homesciencetools.com/article/how-to-build-a-solar-oven-project/)				
Lesson 6: Communicate Students build initial design and test.	45 mins (Have another activity to do while students wait for their solar ovens to warm up.)		Engineering Rebuild and Retest!	**Teacher Resources:**	**Supplemental Resources:**			
Lesson 7: Communicate Students redesign and retest.	45 mins							
Quarter 3								
4.2.4 Harry Potter Wands CANVAS 4.2.4 Harry Potter Wands Google Drive 4.2.4 Harry Potter Wands	30 mins			***Standard 4.2.4*** **Design** a device that converts energy from one form to another. Define the problem, identify criteria and constraints, develop possible solutions using models, analyze data from testing solutions, and propose modifications for optimizing a solution. Emphasize identifying the initial and final forms of energy. Examples could include solar ovens that convert light energy to heat energy or a simple alarm system that converts motion energy into sound energy. (PS3.B, PS3.D, ETS1.A, ETS1.B, ETS1.C)				
Learning Target: I can create a device that converts battery energy into electrical energy into light energy.		binder clips, wire, wooden dowels, electrical tape, tissue paper, paper clips, LED lights, popsicle sticks, straws, CR2025 batteries, fasteners, wire stripper, rubber bands, 3x5 cards, scale						
Lesson 1: Phenomena Students learn how basic circuits work.	30 mins			**Hey Teachers!? A FREE box of supplies to teach this lesson has been sent to your school.** PD training: https://www.loom.com/share/2ec5f92d32514b07bfbe7d8dd010deb7 Kit includes: wires, batteries, straws, popsicle sticks, dowels, binder clips, paper clips, cardstock, metal brads, LED lights, etc...				
Lesson 2: Gather Students draw a plan for their wand and label the various supplies they will need. (and build if time permits)	30 mins			**Teacher Resources:**	**Supplemental Resources:**			
Lesson 3: Reason Students finish their Harry Potter Wand and test their final design.	1 hour (you will want to divide this up.)		Art! Create a Harry Potter wand, extra points for making it look 'wizardly'		Engineering Design: 08 Harry Potter Wands ***Supplies:***			
Lesson 4: Communicate This episode has alternate activities that the teacher may use for presenting circuits to students.								
4.3.1 Waves CANVAS 4.3.1 Waves Google Drive 4.3.1 Waves				Standard 4.3.1 Develop and use a model to describe the regular patterns of waves. Emphasize patterns in terms of amplitude and wavelength. Examples of models could include diagrams, analogies, and physical models such as water or rope. (PS4.A)				
Learning Target: I can develop a model to describe the regular patterns of waves.				**Teacher Resources:**	**Supplemental Resources:**			

Quick Links to SEEd CANVAS Modules.	Quick Links to Amy's Drive (google slides, student journal files)
4.1.1 Functioning Organisms	4.1.1 Organisms Structures &
4.1.2 Memory Systems	4.1.2 Memory Systems (How Animals Respond)
4.1.3 Oh Fossil, Where are you?	4.1.3 Oh, Fossil! Where are you? (Fossils & Ancient Environments)
4.1.4 Call to Order/Rock Layers	4.1.4 Call to Order (Rock Layers)
4.2.1 Take me out to the Ball Game!	4.2.1 Take me out to the ballgame (Energy Transfers: Cause & Effect)
4.2.2 Take me out with the crowd	4.2.2 Take me out with the crowd (Energy Transfer: Collisions)
4.2.3 Buy me some Peanuts and Crackerjacks	4.2.3 Buy me some peanuts and Crackerjacks (Energy Transfer: Sound & Heat)
4.2.4 Harry Potter Wands	4.2.4 Harry Potter Wands (Energy Transfer: Sound & Light)
	4.3.1 Waves
	4.3.2 I see you now (Light Waves)
	4.3.3. Communicating with Patterns
	4.4.1 & 4.4.2 Clark Planetarium
	4.4.1 Brightness of Stars
	4.4.2 Making Sense of Shadows

FOURTH GRADE STEM STORYLINES

Engineering Lessons: https://sites.google.com/provo.edu/pcsd-innovative-learning/home/teachers/integrated-stem-lessons/stem?authuser=0

Quarter	4th SEEd Module Storylines	Approx. Pacing	Supplies needed (Every storyline requires a student journal) Most Storylines use a google slideshow, but it is not always required	Cross-Curricular Activities	Utah Core State SEEd Alignment	Science and Engineering Practice (SEP)	Cross-Cutting Standards (CC)	Disciplinary Core Ideas (DCI) codes	Assessments	Quick Links to SEEd CANVAS Modules.	Quick Links to Amy's Drive (google slides, student journal files)
Quarter	**Lesson 1: Phenomena** Students explore ripples on a lake.		Listen to Chopin's Raindrop Prelude, kebab sticks, modeling clay, suct tape	Music! Listen to Chopin's Raindrop Prelude		Engineering Design: 09 Better Bumper! *Supplies:*					
	Lesson 2: Gather Students investigate what affects a ripple/wave. They play with various ropes and a long slinky to explore the affect on wave patterns. (Definitions: amplitute, wavelenght.)										
	Lesson 3; Reason: Students explain further by gathering more information about transfers of energy and the net motion of a wave. They learn that a eave transfers energy, not matter.										
	Lesson 4: Communicate: Students draw and design a model for a regular wave pattern. They identify the amplitude and wavelenght and are able to identify how to get the amplitute and wavelenght to change based on what type of energy they add to the wave.										
	4.3.2 I see you now (Light Waves) **CANVAS 4.3.2 I see you now (Light Waves)** **Google Drive 4.3.2 I see you now (Light Waves)**				Standard 4.3.2 Develop and use a model to describe how visible light waves reflected from objects enter the eye causing objects to be seen. Emphasize the reflection and movement of light. The structure and function of organs and organ systems and the relationship between color and wavelength will be taught in Grades 6 through 8. (PS4.B)						
	Learning Target: I can create a model to describe how light is necessary in order to see.		Students will need to bring their Harry Potter Wand created in the previous unit, or you can use flashlights, blackened windows/doors, colored paper with numbers listed on them. Different textured materials or objects shoe boxes, laser lights, wave slinky, colored popsicle sticks, mini mirrors, color filter	Art! Study the effects of light on objects.	**Teacher Resources:**	**Supplemental Resources:**					
	Lesson 1: Phenomena I cannot see the color of your shirt in a dark room.					Engineering Design: 10 Petroglyphs *Supplies:*					
	Lesson 2: Gather Students determine how much light is needed to see the color of different objects.										
	Lesson 3: Reason Students construct an explanation to develop a model for light that is reflected off an object.										
	Lesson 4: Communicate: Students develop an argument for how evidence supports that objects can only see seend with light reflects off the surface of the object.										
	Lesson 5: (episode 2) phenomena: Vantablack, the darkest material that we know of existing.										
	Lesson 6: Gather: Studets gather evidence about what cause light to reflect.										
	Lesson 7: Reason: Students collect data for patterns and decribe the patterns of light reflecting from different textured objects, and how they are reflected differently.										
	Lesson 8: Communicate: Students develop and argument to support the explanation that light reflects differently when it shine on different textures.										
Quarter 4	**Quarter 4**										
	4.3.3 Communicating with Patterns **CANVAS 4.3.3 Communicating with Patterns** **Google Drive 4.3.3. Communicating with Patterns**				Standard 4.3.3 Design a solution to an information transfer problem using wave patterns. Define the problem, identify criteria and constraints, develop possible solutions using models, analyze data from testing solutions, and propose modifications for optimizing a solution. Examples could include using light to transmit a message in Morse code or using lenses and mirrors to see objects that are far away. (PS4.C, ETS1.A, ETS1.B, ETS1.C)						
	Lesson 1: Phenomena Students view how ships communicate using patterns of light. (Batfish Submarine)				**Teacher Resources:**	**Supplemental Resources:**					
	Lesson 2: Gather Students learn about codes and sending messages.					Engineering Design: 11 Ocarinas *Supplies:*					
	Lesson 3:										
	Lesson 4: Communicate Students learn about morse code and use a patterns tapped on their desk to send a message to a friend.										
	4.4.1 & 4.4.2 Clark Planetarium Kinesthetic Astronomy Part 1 **CANVAS 4.4.1 & 4.4.2 Clark Planetarium Kinesthetic Astronom y** **Google Drive 4.4.1 & 4.4.2 Clark Planetarium Kinesthetic Astronomy**			Dance	Standard 4.4.1 Construct an explanation that differences in the apparent brightness of the Sun compared to other stars is due to the relative distance (scale) of stars from Earth. Emphasize relative distance from Earth. (ESS1.A)						
	Learning Target: 1. I can explain the apparent differences in the brightness of the sun compared to other stars. 2. i can observe patterns to provide evidence of Earth's rotation/orbit around the sun.				**Teacher Resources:**	**Supplemental Resources:**					
	Day 1: Phenomena: Apparent motion of the sun. (The sun appears to rise in the East, move across the sky and set in the west. This is a repeated daily pattern.										
	Day 2: Gather The proper size-distance scale for the sun, Earth and Stars										
	Day 3: Reason The Kinesthetic Astronomy Circle										
	Day 4: Reason/Communicate Body Geography-- our bodies as planet earth.										
	Day 5: Reason Communicate Earth's Rotation &. Times of Day										
	Day 6: Supporting Phenomena Do Stars Appear to rise and set?										
	4.4.1 & 4.4.2 Clark Planetarium Kinesthetic Astronomy Part 2 **CANVAS 4.4.1 & 4.4.2 Clark Planetarium Kinesthetic Astronom y** **Google Drive 4.4.1 & 4.4.2 Clark Planetarium Kinesthetic Astronomy**										
	4.4.2 Day 1: Phenomena Midnight Constellations Power Point, use the powerpoint to show that different constellations are visble at differnet times of year. This pattern repeats every year.				Standard 4.4.2 Analyze and interpret data of observable patterns to show that Earth rotates on its axis and revolves around the Sun. Emphasize patterns that provide evidence of Earth's rotation and orbits around the Sun. Examples of patterns could include day and night, daily changes in length and direction of shadows, and seasonal appearance of some stars in the night sky. Earth's seasons and its connection to the tilt of Earth's axis will be taught in Grades 6 through 8. (ESS1.B)						
	Day 2: Gather Earth's orbit of the sun.				**Teacher Resources:**	**Supplemental Resources:**					
	Day 3: Reason Finding everyon'es birthday.										
	Day 4: Communicate Will we see the smae stares in the us tonight that people in chine saw last night?										
	4.4.1 Brightness of Stars **CANVAS 4.4.1 Brightness of Stars** **Google Drive 4.4.1 Brightness of Stars**										
			Flashlights, playfround balls, ping-pong ballls, tennis balls, basketballs, baseballs.		**Teacher Resources:**	**Supplemental Resources:**					
	4.4.2 Making Sense of Shadows **CANVAS 4.4.2 Making Sense of Shadows** **Google Drive 4.4.2 Making Sense of Shadows**										
			blow up globes, flashlights, modeling clay, chalk, constellation pictures		**Teacher Resources:**	**Supplemental Resources:**					

FIFTH GRADE STEM STORYLINES

Engineering Lessons: https://sites.google.com/provo.edu/pcsd-innovative-learning

Quarter	Storyline	5th SEEd Module Storylines	Approx. Pacing	Supplies needed (Every storyline requires a student journal) Most Storylines use a google slideshow, but it is not always required to use it:	Cross-Curricular Activities	Utah Core State SEEd Alignment	Science and Engineering Practice (SEP)	Cross-Cutting Standards (CC)	Disciplinary Core Ideas (DCI) codes	Assessments	Quick Links to SEEd CANVAS Modules.	Quick Links to Amy's Drive (google slides, student journal files)
		QUARTER 1										
Quarter 1	Storyline 5.1.1 Earth Features	**5.1.1 Earth Features** CANVAS 5.1.1 Earth Features Google Drive 5.1.1 Earth Features		Access to a computer/internet. Colored Pencils (Red, Brown, Blue in particular) Printed Map of North America (1 per student) Printed Maps of the World (1 per student)		*Standard 5.1.1* **Analyze and interpret data** to describe patterns of Earth's features. Emphasize most earthquakes and volcanoes occur in bands that are often along the boundaries between continents and oceans while major mountain chains may be found inside continents or near their edges. Examples of data could include maps showing locations of mountains on continents and the ocean floor or the locations of volcanoes and earthquakes. (ESS2.B)	Analyzing and Interpreting Data Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used. Analyze and interpret data to make sense of phenomena using logical reasoning.	Patterns can be used as evidence to support an explanation.	(ESS2) Earth's Systems: ESS2.B: Plate Tectonics and Large-Scale System Interactions The locations of mountain ranges, deep ocean trenches, ocean floor structures, earthquakes, and volcanoes occur in patterns. Most earthquakes and volcanoes occur in bands that are often along the boundaries between continents and oceans. Major mountain chains form inside continents or near their edges. Maps can help locate the different land and water features areas of Earth.	Click here to access the assessments folder.	5.1.1 Earth Features	5.1.1 Earth Features
		Learning Target: I can determine the patterns and correlation of Earth's volcanoes and earthquakes.				**Teacher Resources:**	**Supplemental Resources:**				5.1.2 Saltwater & Freshwater	5.1.2 Saltwater and Freshwater
		Episode 1: Phenomena/Engage Students explore the phenomena of a farmer who had a volcano appear in his field. (This can be split into sections, 30 mins for video and 30 mins for reading Pulido's story and commenting on it.)	1 hour			**OVERVIEW:** Engage: Students will gather information about a volcano that grew in a field in Paricutin, Mexico over the course of 9 years, destroying the village. Explore & Explain: Students will gather information about other North American examples of volcano and earthquake activity and mountain ranges to find patterns in the data. They will look at volcanoes in the area of Paricutin to understand and reason that the occurrence of that volcano was part of a pattern rather than a random act. Elaborate: Students will look at examples and nonexamples of volcanoes, earthquakes, and mountain ranges to further analyze and interpret data on patterns of Earth's features. Evaluate: When given a map with known volcano and/or earthquake occurrences, can students identify which location is more likely to have the next occurrence and support their answer using the data from their investigations?	Engineering Design: 01 The Floor is Lava *Supplies:* 4-12x12 pieces of cardboard per team, 20 ft string or rope per team, duct tape, 2-4 buckets(optional)				5.1.3 Weather or Not	5.1.3 Weather or Not
		Episode 2: Gather/Explore Students use a map of North America and draw in the locations of Earthquakes, Volcanoes and Mountains. (This can be split into 30 min parts on multiple days. You have the option to move forward students who finish early.)	1.5 hours								5.1.4 Amazing Race (Earth's Systems: GEO, Bio, Hydro, Atmo)	5.1.4 Amazing Race (Earth's Systems: Geo, Bio, Hydro, Atmo)
		Episode 2 & 3: Gather/Explain Introduce the maps for the World locations of mountains, volcanoes and earthquakes. (Allow time for students to finish the North American map from the day before if needed.)	1 hour								5.1.5 Survivor (Reduce Effects of Natural Disasters)	5.1.5 Survivor (Reduce Effects of natural disasters)
		Episode 3: Reason/Elaborate Students use maps of the World and determine the locations of various volcanos, earthquakes and mountains.	1 hour		Art! Students do dot art to determine where Earthquakes/Volcanoes Occur						5.1.5 Shake it Up!	5.1.5 Shake it Up!
		Episode 4: Comunicate/Evaluate Students complete an assessment about what they learned about Earth's Features.	30 mins								5.2.1 Composition of Matter	5.2.1 Composition of Matter
	Storyline 5.1.2 Saltwater & Freshwater	**5.1.2 Saltwater & Freshwater** CANVAS 5.1.2 Saltwater & Freshwater Google Drive 5.1.2 Saltwater & Freshwater		1 set of printed and made Water Dice 1 set of printed and laminated Water Cards 2 cups of water (for demo) 1 with freshwater, 1 with saltwater If doing second demo, density tank/Food coloring/Salt/Water--see slide 8 for instructions, Don't have a density tank? Do this instead!) Calculators Access to Google Earth Colored Pencils Your science kit contains ice cube trays, toothpicks, plastic tubs, spray bottles, fan, salt, pipettes and balloons.		*Standard 5.1.2* **Use mathematics and computational thinking** to compare the quantity of saltwater and freshwater in various reservoirs to provide evidence for the distribution of water on Earth. Emphasize reservoirs such as oceans, lakes, rivers, glaciers, groundwater, and polar ice caps. Examples of using mathematics and computational thinking could include measuring, estimating, graphing, or finding percentages of quantities. (ESS2.C)	Using Mathematics and Computational Thinking Mathematical and computational thinking in 3–5 builds on K–2 experiences and progresses to extending quantitative measurements to a variety of physical properties and using computation and mathematics to analyze data and compare alternative design solutions. Describe and graph quantities such as area and volume to address scientific questions.	Scale, Proportion, and Quantity: Standard units are used to measure and describe physical quantities such as weight and volume.	ESS2.C: The Roles of Water in Earth's Surface Processes Nearly all of Earth's available water is in the ocean. Most freshwater is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere.		5.2.2 Properties of Matter	5.2.2 Properties of Matter
		Learning Target: I can determine the distribution of freshwater and saltwater on Earth by comparing mathematical charts (pie graphs, data)				**Teacher Resources:**	**Supplemental Resources:**				5.2.3 & 5.2.4 Changes of Matter & Conservation of Matter	5.2.3 & 5.2.4 Changes of Matter & Conservation of Matter
		Episode 1: Phenomena Students explore the phenomena of animals drinking from a freshwater area but not from saltwater.	15 mins			**OVERVIEW:** Engage: Students obtain evidence about animal water sources. They will observe the phenomenon that animals will gather to drink from ponds, lakes, and rivers but we don't see animals gathering to drink from the Great Salt Lake. Explore & Explain: Students will evaluate information about different sources of water to determine if they are fresh or salt water. Elaborate: Students will analyze a map using their knowledge of water sources to determine what quantity of water represented on the map is fresh versus salt water. They will compute the amount of Don't have a density tank? Do this instead!	Engineering Design: 02 Water, Water Everywhere! *Supplies:* EiE book Saving Salila's Turtle Google Slide Deck Red Sheet Green Sheet Stop watch Bottle of contaminated water (for students to test in their filter) Filter Materials 2 liter bottle (Cut in half ⅓ way up from the bottom) Various Filter Materials/ie: Screen Cloth Cotton Balls Cheesecloth 1 cup sand 2 paper filters Tray for used filter and materials after testing Measuring Cup Towel (for spills)				5.3.1 Photosynthesis	5.3.1 Hydropoonics (Photosynthesis)
		Episode 2: Gather Students travel around the class to collect data from dice to determine fresh water and salt water resources.	1 hour (can be divided into multiple 30 min days)								5.3.2 Move it, Move it	5.3.2 Move it, Move it
		Episode 3: Reason Students graph data from fresh and salt water sources to determine how much of each are on Earth.	1 hour (can be divided into multiple 30 min days)								5.3.3 Weakest Link/Strongest Link	5.3.3 Weakest Link/Strongest Link
		Episode 4: Communicate Students look at World Water data and pictures of Earth from space to create a circle graph for the amounts of freshwater and saltwater on Earth. (Our Planet documentary on Fresh Water Video has been provided but only as an optional resource-- the video is 48 mins long.)	15 mins								5.3.4 Rescue the Environment with Utah Lake Study	5.3.4 Rescue Environments with Utah Lake Study
	Storyline 5.1.3 Weather or Not	**5.1.3 Weather or Not** CANVAS 5.1.3 Weather or Not Google Drive 5.1.3 Weather or Not		Food Coloring/Balloons/Water - To make Ice Balloons /Ice Balloons (small if doing 1 per student, large if doing one per group ~5 groups recommended if doing large balloons) --FREEZE 3 days in advance. Toothpicks Salt Sand Trays (for Ice balloons to sit on) towels (for cleaning up water) Other 'erosion tools' would be appropriate (hammer, spoons, pipettes, bathroom cups, straws, spray bottle with water). timer I suggest you do the ice balloon erosion lab outside. Who Moved My Dirt Cards (Laminated) Sidewalk Chalk (1 piece per student) Computers electronic scale ruler If doing demo: cornstarch or cornmeal, salt, fan, tray		*Standard 5.1.3* **Ask questions to plan and carry out investigations** that provide evidence for the effects of weathering and the rate of erosion on the geosphere. Emphasize weathering and erosion by water, ice, wind, gravity, or vegetation. Examples could include observing the effects of cycles of freezing and thawing of water on rock or changing the slope in the downhill movement of water. (ESS2.A, ESS2.E)	Asking Questions and Defining Problems in grades 3–5 builds on grades K–2 experiences and progresses to specifying qualitative relationships. Ask questions that can be investigated based on patterns such as cause and effect relationships. Planning and Carrying Out Investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions. Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon.	Cause and effect relationships are routinely identified, tested, and used to explain change.	ESS2.A: Earth Materials and Systems Rainfall helps to shape the land and affects the types of living things found in a region. Water, ice, wind, living organisms, and gravity break rocks, soils, and sediments into smaller particles and move them around. ESS2.E: Biogeology · Living things affect the physical characteristics of their regions.			
		Learning Target: I can determine the different erosion (water, ice, gravity, vegetation) effects by an completing an investigation.				**Teacher Resources:**	**Supplemental Resources:**					
		Episode 1: Phenomena Students explore the phenomena of flash floods in Southern Utah, complete a chart and play an interactive erosion and weathering game online.	30 mins			**OVERVIEW:** Engage: Students will gather information as they watch two videos and write observations of the phenomenon. The will then use reasoning and question stems to generate questions about the observed phenomenon. They will work with their partner to communicate the three best questions they generated that will best help us investigate the phenomenon.Explore: Students will observe images of different examples of weathering then compare their observations from episode 1 with their observations from this episode and try to come up with the cause. Students will record the cause and effect for each of the images in their journal. Explain: Students will observe an investigation about the rate of weathering on a piece of chalk. Students will then plan their own investigation, changing a variable to either increase or decrease the rate of weathering. Students will record their conclusion, evaluating their new hypothesis. Elaborate & Evaluate: Students will read about an investigation conducted by two scientists. Students will evaluate the results of that experiment and come up with new ways to investigate the phenomenon, recording their predicted results.	Engineering Design: 03 TarPuls/Don't Flood the Fidgets *Supplies:* Map (for class) Village Map TarPuls (per team) 1 small plastic cup Two - 1/4 inch dowels cut at 12 inches nylon string Build supplies for the inside of the large cups (support structure) 2 large deli cups - 32 oz. Masking Tape Student journal (optional) Weights (for testing) 1/4 inch nuts or metal washers	Art Lesson 5.1.3 Weathering and Erosion Watercolor Art *Supplies:* Watercolor paper (2 sheets per student) water colors paint brushes cups water glue				
		Episode 2: Gather Students conduct an experiment on ice balloons to get the ice to 'erode/weather' as quickly as possible. (I suggest that timing be split up into separate planning day and experiment day.)	1 hour		Art! Explore the effects of different chemicals on ice and observe the beauty of melting ice.			Dance Lesson: 5.1.3 Erosion Dance Lesson *Supplies:* Music & open space				
		Episode 3: Reason Students use a series of events and clues to solve the mystery of "Who moved my dirt!"	30 mins									
		Episode 4: Communicate Students look at a series of real erosion events and determine the cause and effect from each.	30 mins									
		Quarter 2										
Quarter 2		**5.1.4 Amazing Race** CANVAS 5.1.4 Amazing Race Google Drive 5.1.4 Amazing Race				Standard 5.1.4 Develop a model to describe interactions between Earth's systems including the geosphere, biosphere, hydrosphere, and/or atmosphere. Emphasize interactions between only two systems at a time. Examples could include the influence of a rainstorm in a desert, waves on a shoreline, or mountains on clouds. (ESS2.A)	Developing and Using Models: Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions. Develop a model using an example to describe a scientific principle.	Systems and System Models: A system can be described in terms of its components and their interactions.	ESS2.A: Earth Materials and Systems: Earth's major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans). These systems interact in multiple ways to affect Earth's surface materials and processes. The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate. Winds and clouds in the atmosphere interact with the landforms to determine patterns of weather.			
		Learning Target: I can develop models to describe interactions between Earth's systems- geosphere, hydrosphere, biosphere, and atmosphere.				**Teacher Resources:**						
		The **Phenomena, Gather, Reason & Communicate** portions of this lesson are scattered all throughout this week, with each station having a small portion of each.		Copy of the Amazing Race Passport (1 per student) Amazing Race Google Slides (required) Amazing Race volcano foldable (1 per student) Amazing Race Station materials (1-2 per station) Amazing Race Station Words (1-2 per station or 1 per student if prefferred)		**OVERVIEW:** Engage: Students look at video/images that show elements that represent all four spheres: geosphere, biosphere, hydrosphere, and atmosphere. In groups, they are assigned a component to describe and determine its interactions with the other components in the picture. Elaborate: Students create a visual model of the interactions between Earth's systems using what they have learned from the videos and by evaluating the phenomenon pictures. (Within the traveling between stations. Evaluate: Students will further their model by writing what would happen if parts of the system were no longer there or functioning. They evaluate a model from the Tambora Eruption and Lake Nyos. Students draw a model showing the interaction of all 4 spheres.	Engineering Design: 04 Oil on the Ocean *Supplies:*					
		Day 1-2: Students will use a passport to travel around exploring different phenomena and completing activities related to the 4 main spheres. I suggest that Day 1 covers passport pages 1-2. Day 2 that students complete pages 3 & 4 of the passport and afterwards discuss findings with the class. (STATIONS 1& 2 and STATIONS 3 & 4 need to be completed before moving on to other stations.)	30 mins									
		Day 3 students explore 3 different stations in class. (All the remaining stations can go out of order.)	30 mins		Art! Create a volcano model.							
		Day 4 students explote the remaining 3 stations or any that have been missed. (All the remaining stations can go out of order.)	30 mins									
		Catch up anyone who still needs to complete the stations. (Also, teacher led discussion about findings.)	30 mins									
		5.1.5 Survivor CANVAS 5.1.5 Survivor Google Drive 5.1.1 Survivor				Standard 5.1.5 Design solutions to reduce the effects of naturally occurring events that impact humans. Define the problem, identify criteria and constraints, develop possible solutions using models, analyze data from testing solutions, and propose modifications for optimizing a solution. Emphasize that humans cannot eliminate natural hazards, but they can take steps to reduce their impacts. Examples of events could include landslides, earthquakes, tsunamis, blizzards, or volcanic eruptions. (ESS3.B, ETS1.A, ETS1.B, ETS1.C)	Constructing Explanations and Designing Solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems. · Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution.	Cause and Effect relationships are routinely identified, tested, and used to explain change.	ESS3.B: Natural Hazards A variety of hazards result from natural processes (e.g., earthquakes, tsunamis, volcanic eruptions). Humans cannot eliminate the hazards but can take steps to reduce their impacts.			
		Learning Target: I can design a soluation to reduce effects from a natural disaster (flooding, earthquake, tsunami, volcanic eruption, blizzard).				**Teacher Resources:**						
		Episode 1: Phenomena Students learn about the Biosphere 2: The Martian Colony we made on Earth.	30 mins	The Student journal for this unit can be for individual students or for tribes(teams), decide which is best for your class. Survivor Google Slide (required) Make sure your speakers are working, this slide deck uses sounds. OPTIONAL: Water Tray (1 per tribe), Items to build a small structure, pitcher of water, sand, timer. If doing the full Survivor Setup: Supply tokens, Fire Tokens, Square origami paper, popsicle sticks, (supplies to build a shelter) tape. cardstock, Aluminum, Cotton balls, Skewers, construciton paper, staples, brads, plastic wrap. (Your science kit contains popsicle sticks, modeling clay and straws.) Atmosphere, Biosphere, Geosphere & Hydrosphere Cards	Drama!		Engineering Design: 05 Survivor (Engineering Lesson) *Supplies:*					
		Episode 2: Gather Students identify the problems associated with a landslide for the biosphere, geosphere, atmosphere and hydrosphere.	15-25 mins			**OVERVIEW:** Engage & Explore: Students define problems caused by natural hazards by observing different hazards and their effects on humans. Explain, Elaborate & Evaluate: Students design solutions to different natural hazards and carry out an investigation showing how their designed solution is able to mitigate the effects of a natural hazard. (Focus is on Floods, Earthquakes, Volcanic Eruptions, Tsunamis and Blizzards (Teachers can choose which hazards they study as a class.)						
		Students chose a tribe, gather supplies, play for an immunity, etc.	Spread out over many days, this can be as short as 15 minutes or as long as 1 hour.									
		Episode 3: GRC Students come up with ways to survive an earthquake, tsunami, volcanic eruption or blizzard. They identify problems and solutions for each.	30 mins									
		Episode 4: GRC Students come up with ways to survive an earthquake, tsunami, volcanic eruption or blizzard. They identify problems and solutions for each.	30 mins									
		Episode 5: GRC Students come up with ways to survive an earthquake, tsunami, volcanic eruption or blizzard. They identify problems and solutions for each.	30 mins									
		Episode 6: GRC Students come up with ways to survive an earthquake, tsunami, volcanic eruption or blizzard. They identify problems and solutions for each.	30 mins									
		Extra: Students respond/evaluate their survival and create an at home survival kit.	30 mins									
		5.1.5 Shake Things Up! CANVAS 5.1.5 Shake Things Up! Google Drive 5.1.5 Shake Things UP!		Items to build a small structure, timer. Suggested Items: popsicle sticks, cardstock, aluminum foil, skewers, construciton paper, staples, brads, plastic wrap, masking tape, index cards, coffee stirrers or straws, pipe cleaners, string or yarn, toothpicks, paperclips, brass fasterneres, twist ties, binder clips. Students should only be allowed to use tape during round 1, during round 2 tape is removed!		Standard 5.1.5 Design solutions to reduce the effects of naturally occurring events that impact humans. Define the problem, identify criteria and constraints, develop possible solutions using models, analyze data from testing solutions, and propose modifications for optimizing a solution. Emphasize that humans cannot eliminate natural hazards, but they can take steps to reduce their impacts. Examples of events could include landslides, earthquakes, tsunamis, blizzards, or volcanic eruptions. (ESS3.B, ETS1.A, ETS1.B, ETS1.C)	Constructing Explanations and Designing Solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems. · Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution.	Cause and Effect relationships are routinely identified, tested, and used to explain change.	ESS3.B: Natural Hazards A variety of hazards result from natural processes (e.g., earthquakes, tsunamis, volcanic eruptions). Humans cannot eliminate the hazards but can take steps to reduce their impacts.			
		Learning Target: I can design a solution to reduce effects from a natural disaster (earthquake).				**Teacher Resources:**						
		Episode 1: Phenomena Students learn about the Earthquake in Haiti	30 mins									
		Episode 2: Gather Students learn more about Earthquakes and gather information for how to prevent Earthquake damage.	30 mins		Engineering Build!	**OVERVIEW:** In this unit students learn about the Haiti Earthquake from 2010, they engineer model buildings and develop building codes that help others build an earthquake-resistant structure. Students build a small structure, test it in a simulated earthquake, improve their design and test again.						
		Episode 3: Gather/Reason Students design a structure which is placed on a shaker table and determine how to improve the design.	1 hour (can be split)		Engineering Test!							
		Episode 4: Reason Students come up with ways to survive an earthquake, and modify their design based on design codes.	30 mins-1 hour		Engineering Rebuild and Retest!							
		5.2.1 Composition of Matter CANVAS 5.2.1 Composition of Matter Google Drive 5.2.1 Composition of Matter				Standard 5.2.1 Develop and use a model to describe that matter is made of particles on a scale that is too small to be seen. Emphasize making observations of changes supported by a particle model of matter. Examples could include adding air to expand a balloon, compressing air in a syringe, adding food coloring to water, or dissolving salt in water and evaporating the water. The use of the terms atoms and molecules will be taught in Grades 6 through 8. (PS1.A)	Developing and Using Models: Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions. Develop a model using an example to describe a scientific principle.	Scale, Proportion, Quanitity Matter and Energy Structure and Function Cause and Effect	PS1.A: Structure and Properties of Matter The amount (weight) of matter is conserved when it changes form, even in transitions in which it seems to vanish.			
		Learning Target: I can draw a model to describe the behavior of particles too small to be seen.				**Teacher Resources:**	**Supplemental Resources:**					
		Episode 1: Phenomena Observe a physics balloon experiment. Determine what makes liquids different. Make lemonade to see how particles hide, blow bubbles to make air particles visible (or the teacher can do a dry ice bubble demonstration)	30 - 45 mins	Straws Water Small Cups (1 per student) Lemonade or Root Beer making supplies. Pitcher Dry ice if doing dry ice experiments Balloons, 1-liter OR 2-liter soda bottles -take the labels off all the bottles -one third of the bottles you will do nothing else to -one third of the bottles you will poke holes around the middle of the bottle -one third of the bottles you will poke holes into the bottom of bottle To poke holes, get the tip of an iron nail hot and press it into the bottle (or heat up a hot glue gun and press the nozzle into the bottle). This will take time, so gather your soda bottles in advance!		**OVERVIEW:** To begin the storyline, students will engage by observing the phenomenon of bubbles forming in a liquid when a gas is inserted. (making soda pop, making lemonade, dry ice experiments) Observations and questions will be recorded. Students will explore how they interact with different phases of matter to help them develop a model of what matter is made of on a small scale. Students will obtain information about the particle model of matter and explain and elaborate their understanding of the particles found in solids, liquids, and gases by revising their models. Students will be evaluated on their understanding with a performance assessment that includes developing models for three systems that include balloons and soda bottles.	Art Lesson: 5.2.1 & 5.2.2 Art, Glass & Science (Dale Chihuly Lesson) *Supplies:* Clear Plastic Plates (1 per student) Permanent Markers (Colorful) Metal Tongs Heat Gun					
		Episode 2: Gather Students watch Particles of this world, define matter, particles and review solid, liquids & gases. (Bill Nye the Science Guy is provided if needed.)	30-45 mins									
		Episode 3: Reason Students study solids, liquids and gases through a series of supporting phenomena (aerogel, swimming world record, indoor skydiving), they draw models for particles of the states of matter. They can dance like molecules.	30 min		DANCE TEACHER EVENT! Dance like the molecules.							
		Episode 4: Communicate Experiment with Oobleck, revise the particle drawings and determine what happens inside a bottle when air particles are removed.	30 min									
		Quarter 3										
Quarter 3		**5.2.2 Properties of Matter** CANVAS 5.2.2 Properties of Matter Google Drive 5.2.2 Properties of Matter		Random Candies in a bag. Bag of Various Buttons Objects made of various materials--wood, metal, plastic, glass etc (you can have		Standard 5.2.2 Ask questions to plan and carry out investigations to identify substances based on patterns of their properties. Emphasize using properties to identify substances. Examples of properties could include color, hardness, conductivity, solubility, or a response to magnetic forces. Examples of substances could include powders, metals, minerals, or liquids. (PS1.A)	Ask Questions Plan and Carry Out Investigations Analyze Data Engage in argument from evidence	Patterns can be used as evidence to support an explanation.	PS1.A: Structure and Properties of Matter: The amount (weight) of matter is conserved when it changes form, even in transitions in which it seems to vanish.			
		Learning Target: I can identify substances based on their properties.				**Teacher Resources:**	**Supplemental Resources:**					

FIFTH GRADE STEM STORYLINES

Engineering Lessons: https://sites.google.com/provo.edu/pcsd-innovative-learning/home/teachers/integrated-stem-lessons/stem?authuser=0

Quarter	5th SEEd Module Storylines	Approx. Pacing	Supplies needed (Every storyline requires a student journal) Most Storylines use a google slideshow, but it is not always required to use it:	Cross-Curricular Activities	Utah Core State SEEd Alignment	Science and Engineering Practice (SEP)	Cross-Cutting Standards (CC)	Disciplinary Core Ideas (DCI) codes	Assessments	Quick Links to SEEd CANVAS Modules.	Quick Links to Amy's Drive (google slides, student journal files)
Quarter 3	**Episode 1: Phenomena** Students identify unseen objects in a bag. Look at differences between identical twins, learn about properties of matter and play a game called Button, Button, who has my button. **Episode 2: Gather** Students find similarties and differences in a pile of objects, they list/group the objects on the whiteboard, they recieve a property of matter card and discuss options fot testing that particular property. **Episode 3: Reason/Communicate** Students participate in the Experiment Symposium-- They come up with ways to test a property of matter and create a mini set of experiments to test that properly (Instructions provided, this should be assigned and have a due date of appox 1 week. If time doesn't permit for the full Experiment Symposium, then teachers have the option to do the Experiment Symposium Lab - or both if preferred.) **Episode 4: Reason/Communicate** Students learn how Jelly Belly's are made and participate in a chemical analysis lab-- by trying to identify unknown powders commonly found in a kitchen. (Optional activity: Jelly Belly Dichotomous key)	20-30 min 30 min 30 min- 1 hour (split this over multiple days) Chemical Analysis Lab: 1 hour Jelly Belly: 20-30 min	students bring in objects to study, density cubes are in your science kit.) Your supply box contains various marbles, metal marbles, wooden marbles, and small bouncy balls. Property of matter cards Objects to test the various materials: nail, glass stratch plates, ceramic scratch plates, hand warmers, hotpads, magnefying glasses, tini spoons, magnets, a container of water, graduated cylinders, flashlight Some properties don't require extra supplies: malleability, elasticity, bounciness. Other properties do require specific supplies: Hardness: something to scratch with, like a nail Electric conductivity: supplies to create an incomplete circuit: battery, wires, bulb. Magnetic: a magnet Buoyancy: water and a container to hold it Solubility: water and a container to hold it Reflectivity: a source of light, like a flashlight Thermal conductivity: you can test this without using a heat source. Objects that conduct heat well will melt ice quickly. When placed on top, an indentation will form in the ice. (You have a hotpad and thermal hand warmer in your science kit, use it to heat up and object and test how long it hold that heat. You also have liquid soap in your kit, if you want to show the kids dry ice bubbles as a demo.) For Episode 4: Well plates, Plastic cup, Straws, Tape, Water, Flour, Several other white powders (gelatin, baking powder, yeast, ground Alka- seltzer, corn starch, powdered sugar, salt, sand, and/or baby powder), Vinegar, Iodine, foil Small cups, Plastic spoon, Toothpick, Wax paper, Pipettes or eyedroppers, Magnifying glasses, safety glasses For episode 4: Jelly Belly candies & Jelly Belly Key (optional)	BTS ARTS TEACHER EVENT!	**OVERVIEW:** Students engage with the phenomenon that different types of matter have different properties by observing the similarities and differences between salt and sugar, especially when used in a recipe.Students will then explore the patterns of substances' properties by planning and carrying out an investigation.Students will analyze the data from the investigation and explain their understanding by constructing an explanation of the patterns found in the data.Finally, students will elaborate by participating in a 'crime scene investigation.' They will obtain information about properties of different substances and construct an argument based on evidence about the solution of the crime, which will be used to evaluate their understanding.	Engineering Design Lab Activity: PANCAKE WARS Pancake Wars Student Handout Pancake Wars Rubric *Supplies:* Flour, Salt, Baking Powder, Eggs, Milk, Sugar, Syrup, mixing bowls, measuring cups, measuring spoons, plates, forks, napkins, electric griddles, spatulas	Engineering Design: 06 Pancake Wars *Supplies:*				
Quarter 3	**5.2.3 & 5.2.4 Changes of Matter** CANVAS 5.2.3 & 5.2.4 Changes of Matter Google Drive 5.2.3. & 5.2.4 Changes of Matter				Standard 5.2.3 Plan and carry out investigations to determine the effect of combining two or more substances. Emphasize whether a new substance is or is not created by the formation of a new substance with different properties. Examples could include combining vinegar and baking soda or rusting an iron nail in water. (PS1.B)	Obtain, evaluate and Communicate Information Plan and carry out investigations Use mathematics and computational thinking	Cause & Effect	PS1.A: Structure and Properties of Matter The amount (weight) of matter is conserved when it changes form, even in transitions in which it seems to vanish. PS1.B: Chemical Reactions · When two or more different substances are mixed, a new substance with different properties may be formed.			
	Learning Target: I can investigate what happens when two substances combine.		**Suggested experiments will need the following:** Sugar, water, glass or clear container, small plastic cups, stirring sticks (or small spoons), electronic scale, legos, ice cubes, baking soda, vinegra, popcorn, clay, water/paper towels, steel wood in a jar of water, chromatography circle, marker(various colors).		Standard 5.2.4 Use mathematics and computational thinking to provide evidence that regardless of the type of change that occurs when heating, cooling, or combining substances, the total weight of matter is conserved. Examples could include melting an ice cube, dissolving salt in water, and combining baking soda and vinegar in a closed bag. (PS1.A, PS1.B)	Use mathematics and computational thinking	Matter				
					Teacher Resources:	**Supplemental Resources:**					
	Episode 1: Phenomena Explore the rainbow color show, sulfuric acid and sugar experiment, dicuss science safety **Episode 1 cont**: Physical and Chemical Properties **Episode 2: Gather** Reversible and Irreversible interactions, COMMON MISCONCEPTION IDENTIFIED, video on chemical changes. (Alternate activity eat a layered cake.) **Episode 3: Reason Conservation lab** -- the first part of the lab is completed as a group. Students take a bag of legos and weight them on a scale, then students build something using ALL of the legos they chose-- they try to determine if the legos will weigh more, or less when combined and they weight the legos again. - do this multiple times until EVERYONE understands that the weight will not change. **Episode 3 cont.: Communicate** Make no bake cookies, again weigh supplies before and after mixing. Discuss if new substances were made or not. (If you can bring baked cookies and ask if they think the weight changes between the dough and the baked cookie. Why is there a change in the weight discussion... **Episode 4: Supporting Phenomena** Conservation of mass in open and closed systems. Definition of open and closed systems, Discussion of MATTER IS CONSERVED. **Episode 4 Cont.:** CONSERVATION OF MATTER Lab. Students explore open and closed systems. They present their findings. **Episode 4 cont.: Conservation of Matter:** Claim, Evidence & Reasoning: students use evidence to support an argument. They determine what happened to the change in weight between the dough and baked cookie -- turned into a gas, escaped into the system. **Summative Assessment:** Soda Pop, Curdled Milk, Lemon Juice & Baking Soda	15-20 min 20 min 30 min 30-45 mins 30-45 mins 30 min 30 min - 1 hour 30 mins 30 min	**Other Options for experiments:** This storyline requires a variety of substances that can be used to investigate combinations that ***do not produce new substances*** with new properties. *Examples are included below.* Pick what you have on hand or is easy to get. Items that give an expected color change: multiple colors of playdough,or water-flavoring packets and water Items that can be combined into different shapes: Connecting blocks (like the math manipulatives) or Legos Items that can be mixed together and then separated: salt & pepper, oil & water, multiple colors of beads You will also want small cups or other containers to hold the substances. Weight will be one of the properties measured in students' investigations. You will need at least one scale for students to use. This storyline also requires a variety of substances that can be used to investigate combinations that ***do produce new substances*** with new properties. water, vinegar, milk, hydrogen peroxide, Epsom salt, baking soda, dry yeast, red cabbage juice (created by boiling red cabbage leaves in water), antacid tablets, steel wool You will also want small cups or other containers to hold the substances. Students should wear safety goggles during this investigation. optional: bring no bake cookie dough or other similar mixed item (conservation of matter)	Art! Explore what happens when you mix different compounds. Explore the effects on paper.	**OVERVIEW:** To begin the storyline, students will engage with a phenomenon by observing the effects of mixing sugar with two clear liquids. Observations and questions will be recorded.Students will explore by investigating analogous phenomena during the course of two episodes.Students will use evidence from investigations to explain their understanding of the effects of combining substances.Students will elaborate on the cause of the phenomenon by obtaining information from an informational text.Students will then explore and explain the effect on weight of matter as it is heated, cooled, or combined. Students will be evaluated on their understanding on a summative assessment.	Demo Activity: Things to do with Dry Ice *Supplies:* dry ice, styrofoam container, balloons, hammer, bromothmol blue,(optional) phenolphthalein (optional), liquid soap, metal spoon, candle, pitcher, test tube, cup, gloves 5.2.3 Water Density Rainbow/Chemical Watercolor Creations *Supplies:* Water Colors, water, vinegar, 5% bleach solution, salt, flour, other variious kitchen powders.	Engineering Design: 07 Feeling Bubbly *Supplies:*				
Quarter 3	**5.3.1 Hydroponics (Photosynthesis renamed)** CANVAS 5.3.1 Hydroponics (Photosynthesis) Google Drive 5.3.1 Hydroponics (Photosynthesis)				Standard 5.3.1 Construct an explanation that plants use air, water, and energy from sunlight to produce plant matter needed for growth. Emphasize photosynthesis at a conceptual level and that plant matter comes mostly from air and water, not from the soil. Photosynthesis at the cellular level will be taught in Grades 6 through 8. (LS1.C)	Constructing Explanations and Designing Solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems. · Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution.	Energy and Matter: Energy can be transferred in various ways and between objects.	LS1.C: Organization for Matter and Energy Flow in Organisms Plants acquire their material for growth chiefly from air and water.			
	Learning Target: I can determine how plants grow using photosynthesis and do not need soil in order to grow.				**Teacher Resources:**	**Supplemental Resources:**					
	Episode 1: Phenomena: Plant growing and Plants changing with the seasons. Gather: Ask questions about plant grow and discuss with a team what you know. Reason: Develop a model of a plant (label all the parts) Communicate: Students share their plant model with the class. Episode 2: Phenomena: Air Plants (water lilies) Gather: Reading about hydroponics. Reason: Students develop a new model of an air/water plant. Communicate: Write an explanation for how an air/water/hydroponics plant works. Phenomena: Aquaponics Gather: Build a hydroponics/aquaponics container and measure growth over a series of days. Reason: Share your collected data about your plant's growth. Communicate: Construct an explanation for how you can grow plants without soil.	40 min 40 min 30-45 min for setup and 5-10 min over a couple of weeks to collect data	5.3.1 e. 3 hydroponics: see article (this is an optional part of episode 3) https://www.epicgardening.com/hydroponics-for-kids/ Plastic cups or pots, Potting soil, Wisconsin fast plant seeds, or other fast-growing seeds (e.g. radishes, pumpkins, beans, peas, etc.), Lamp (if sunlight isn't possible or if students want to compare sunlight with artificial light), Water, Rulers (to measure growth), If attempting hydroponics, see article above. Science Kit Contains: Coconut coir, hydroponics nutrients, sweet basil seeds, pH paper, cotton rope. Students bring from home: 2-liter pop bottle		Engage: Students watch a time-lapse video and make observations about a plant growing. They ask questions about it and then develop a model, showing what energy and matter a plant needs to grow. Explore & Explain: Students observe water lilies and air plants and read short explanations about the plants. The students develop models to revise their original thinking about the energy and matter all plants need. Elaborate: Students plan and carry out an investigation to confirm what energy and matter plants need in order to grow. Students collect and analyze and interpret data. Evaluate: Students construct an explanation using evidence from their investigation that answers the question of what plants need in order to grow, specifically air and water (matter) and sunlight (energy). Students will also use this investigation to explain why water lilies and air plants are able to grow.	Lab Activity: Hydroponics/Aquaponics Instructions Hydroponics Instructional Docs *Supplies:* 2 - liter bottle, water, water plant (prefferred) though an herb plant such as mint, bamboo works well too, water nutrients, pH paper, a small creature (snail/frog prefferred) (most small aquaponics will not handle a fish well.)	Engineering Design: 08 Hydroponics *Supplies:*				
Quarter 4	Quarter 4 **5.3.2 Move it, Move it** CANVAS 5.3.2 Move it, Move it Google Drive 5.3.2 Move it, Move it				Standard 5.3.2 Obtain, evaluate, and communicate information that animals obtain energy and matter from the food they eat for body repair, growth, and motion and to maintain body warmth. Emphasize that the energy used by animals was once energy from the Sun. Cellular respiration will be taught in Grades 6 through 8. (PS3.D, LS1.C)	Obtain, evaluate, and communicate information in K–2 builds on prior experiences and uses observations and texts to communicate new information. Read grade-appropriate texts and/or use media to obtain scientific information to describe patterns in the natural world.	Energy and Matter: Energy can be transferred in various ways and between objects.	PS3.D: Energy in Chemical Processes and Everyday Life The energy released [from] food was once energy from the sun that was captured by plants in the chemical process that forms plant matter (from air and water). LS1.C: Organization for Matter and Energy Flow in Organisms Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion. (secondary)			
	Learning Target: I can determine how energy from the sun is converted into energy for plants and into animals. 2. I can determine how energy is used to help the human body repair, grow, stay warm and move.				**Teacher Resources:**						
	Episode 1: Phenomena of a rabbit eating a celery Gather/Reason: Share ideas with a partner for why animals behave in this manner. Communicate: Students write a paragrph for why animals need to eat. Episode 2: Phenomena: Humans need to eat too. Gather: Students list items they have eaten. Reason: Students identify what type of organism thier food comes from. Communicate: Students develop a model for where organisms get their energy (food chain) Episode 3: Phenomena: Energy come from the sun. Gather/Reason: Students research an animals to determine where that animal get's it's food/energy to move. Communicate: Students share their findings. Final Task: Students create a story for how the an animal got their energy from food.	30 mins 30 mins 1 hour	Computers Whiteboard (for class discussion) printed articles about animals Crayons or Colored Pencils		Engage: Students observe a rabbit eating and record observations. They then consider why the animal eats. They look for patterns in the ideas the class shares.Explore: Students explore what they last ate to show they also eat food and to analyze patterns in energy/matter sources.Explain: Students obtain information by conducting research animal behaviors to explain how animals use energy and matter/why animals need to eat food. Elaborate: Students work with the class to compile a list of ways animals use energy and matter.Evaluate: Students communicate their understanding by writing a story about a rabbit explaining what the animal uses energy and matter to do.						
Quarter 4	**5.3.3 Weakest Link/Strongest Link** CANVAS 5.3.3 Weakest Link/Strongest Link Google Drive 5.3.3 Weakest Link/Strongest Link				Standard 5.3.3 Develop and use a model to describe the movement of matter among plants, animals, decomposers, and the environment. Emphasize that matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. Examples could include simple food chains from ecosystems such as deserts or oceans or diagrams of decomposers returning matter to the environment. Complex interactions in a food web will be taught in Grades 6 through 8. (LS2.A, LS2.B)	Developing and Using Models: Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i. e., diagram, drawing, physical replica, diorama, dramatization, storyboard) that represent concrete events or design solutions. Use a model to represent relationships in the natural world.	Energy and Matter: Energy can be transferred in various ways and between objects.	LS2.A: Interdependent Relationships in Ecosystems The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and animals) and therefore operate as "decomposers." Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem. LS2.B: Cycles of Matter and Energy Transfer in Ecosystems Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. Organisms obtain gases, and water, from the environment, and release waste matter (gas, liquid, or solid) back into the environment.			
	Learning Target: I can create a simple food chain and describe the movement of matter from the sun though all levels of producers, consumers and decomposers.				**Teacher Resources:**	**Supplemental Resources:**					
	Episode 1: Phenomena: Students watch videos of plants decomposing Gather: Student classroom discussion on what happened, afterwards students read an article on decomposers. Reason: Students create a model for what they think is happening to the decomposing plants. Communicate: Students post their ideas and explore other ideas through a gallery walk. Episode 2: Phenomena: Watch a video of a spider making a web near rotting radishes. Gather: Students write an explanation for the spider's behavior. Reason: Pair and Share with partners your findings. Communicate: Students draw a model and label it for what is happening to the plant. Episode 3: Phenomena: What are some things you ate this week? Gather: Students determine the sources of their food and fill out a t-chart. They create a model showing a food chain. Gather: Students pick an animal to research (they are not limited to the pictures on the slide) students find out what the animal eats and what eats that animals. Reason: Students create a model fot the animals that they chose. Comminicate: Students revise the model and show how the matter is cycled through the environment. Supplemental: Have students create a paper chain with pictures (or words) of the plants/animsls in their food chain and link them together in order.	80 min 30 min 45-60 min 30-45 min	Computers Optional: If doing a rotten food demo ziplock bags/slice of food such as a tomato to place in the bag. Printed Decomposer Article Paper or poster for students to develop models crayons, colored pencils scissors cardstock (for paper chain)		Engage/Explore/Explain: Students are engaged by a question and experience from the teacher. They then observe time-lapse video clips of fruits and vegetables growing mold and "disappearing" over time. Students plan and carry out an investigation to see what happens to a food item over time (where does the matter go?). Following this, students develop a model to communicate their reasoning.Elaborate: Students elaborate on this idea by constructing an explanation of how matter moves to the spider (in the Beets video).Evaluate: Students elaborate on their learning by obtaining information about what an animal of their choice eats. They demonstrate their understanding of matter moving and cycling by developing a food chain model including the animal they chose.	Computer Science Activity: 5.3.3 CS Predator vs. Prey *Supplies:* Ipads (or chromebooks) Spheros Masking Tape small objects for the floor	Engineering Design: 10 Provo River Delta *Supplies:*				
Quarter 4	**5.3.4 Rescue the Environment with Utah Lake Study** CANVAS 5.3.4 Rescue the Environment Google Drive 5.3.4 Rescue the Environment				Standard 5.3.4 Evaluate design solutions whose primary function is to conserve Earth's environments and resources. Define the problem, identify criteria and constraints, analyze available data on proposed solutions, and determine an optimal solution. Emphasize how humans can balance everyday needs (agriculture, industry, and energy) while conserving Earth's environments and resources. (ESS3.A, ESS3.C, ETS1.A, ETS1.B, ETS1.C)	Constructing Explanations and Designing Solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems. · Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution.	Structure and Function: The shape and stability of structures of natural and designed objects are related to their function(s).	ESS3.A: Natural Resources Energy and fuels that humans use are derived from natural sources, and their use affects the environment in multiple ways. Some resources are renewable over time, and others are not. ESS3.C: Human Impacts on Earth Systems Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments.			
	Learning Target: I can design a solution to solve an environmental issue in order to preserve Earth's environment (water).				**Teacher Resources:**	**Supplemental Resources:**					
	Episode 1: PGRC- students look at use of fossil fuels/graphs. They generate questions and research information about the graphs presented. **Episode 2:** PGRC - Students looks at domestic water use, they determine how much water they use daily. They find ways to reduce their water use. **Episode 3:** PGRC: Students examine a water conservation toilet, they determine which response to water use is better.	30 min- 1 hour 1.5-2 hours 45 min	Computers or printed articles (see teacher note on slide 8) Paper to create posters Crayons/Markers/Colored Pencils		Engage & Explore: Students observe graphs showing energy usage and waste production from the United States over several decades. They ask questions and obtain information to help them answer their questions. Explain: Students observe a map showing water usage by state as well as population growth. Students explain the significance of including population growth on the graph. Students investigate different methods households can implement that have the function of reducing water usage and explain which design solutions are most effective by creating a poster. Elaborate & Evaluate: Students learn about the sustainability plans of Utah universities and evaluate them to determine which is the optimal design solution with the function of conserving Earth's environments and resources	**Mining and Reclamation (1-2 hours):** Learning Target: I can design a solution to solve an environmental issue in order to preserve Earth's environment (soil). Mining and Reclamation: Teacher Instructions Mining and Reclamation: PDF Instructions Mining and Reclamation: Student Handout	Engineering Design: 11 Mining Cookies *Supplies:*				
	Episode 4: PGRC Students look at a Utah Lake specific problem in which the lake is experiencing eutrophication. Students look at 5 different potential problems with the lake. They explore each through a series of mini-games, arts, and an engineering process. Students create, design and redesign objects that will assist with the problems of Utah Lake. They test their findings and report back through writing in their student journal.	1 -2 hours	Station 1: Clear bin with sand, cotton ball, food dye, water, cups, floating beads Station 2: "Pit" Cards Station 3: Sun-sensitive paper or thin tissue paper, flashlights items to brainsotrm with (popsicle sticks, tape, paper etc) Station 4: plastic spoons, forks, knifes, toothpicks, small cup small items to 'collect' in the cup: marshmallows, cheerios, skittles Station 5: water tub or rain gutter, confetti (paper dots work too), aluminum foil, water, straws, paper for sail, scissors	Art!	Students participate in a 5 station engineering design challenge. Each station is tailored to a separate issue with Utah Lake. You may teach them each separately or split the class and have each team address a separate issue.	**Be Aware of Our Air (1-2 hours):** Learning Target: I can design a solution to solve an environmental issue in order to preserve Earth's environment (air). Be Aware of Our Air: Teacher Instructions Be Aware of Our Air: PDF Instructions Be Aware of Our Air: Student Handout					
	End of Year										

SIXTH GRADE STEM STORYLINES

Engineering Lessons: https://sites.google.com/provo.edu/pcsd-innovative-learning/home/teachers/integrated-stem-lessons/stem?authuser=0

6th SEEd Module Storylines	Approx. Pacing	Supplies needed (Every storyline requires a student journal) Most Storylines use a google slideshow, but it is not always required to use it:	Cross-Curricular Activities	Utah Core State SEEd Alignment	Science and Engineering Practice (SEP)	Cross-Cutting Standards (CC)	Disciplinary Core Ideas (DCI) codes	Assessments	Quick Links to SEEd CANVAS Modules.	Quick Links to Amy's Drive (google slides, student journal files)
QUARTER 1	Approx. Pacing	Supplies needed:	Cross-Curricular Activities	Utah Core State SEEd Alignment	Cross-Cutting Standards (CC)	Science and Engineering Practice (SEP)	Disciplinary Core Ideas (DCI) codes			
CANVAS 6.2.1 Energy Affects Matter Google Drive 6.2.1 Energy Affects Matter				*Standard 6.2.1* **Develop models** to show that molecules are made of different kinds, proportions and quantities of atoms. Emphasize understanding that there are differences between atoms and molecules, and that certain combinations of atoms form specific molecules. Examples of simple molecules could include water (H2O), atmospheric oxygen (O2), and carbon dioxide (CO2). (PS1.A)	Scale Proportion & Quantity	Developing and Using Models	(PS1) Matter and It's Interactions			6.1.1
Students explore the phenomena of the size of atoms and the difference between salt and sugar.	30 min			**Teacher Resources:**	**Supplemental Resources:**				6.1.2 MISSION TO MARS	6.1.2 MISSION TO MARS
Students play a card game called Kings and Serfs, to determine how atoms combine to create molecules. (this can be split into two 30 min days or shortened depending on time)	1 hour		Puppet Play! [1]		Engineering Design: 01 Building Blocks of the World *Supplies:*					6.1.3
Students create their own molecules with appox correct porportions. They relate pictures of real molecules to the ones they make. (this can be split into two 30 min days or shortened depending on time)	1 hour				Engineering Design: 04 Kings and Serfs *Supplies:*				6.2.1 Energy Affects Matter	6.2.1 ENERGY AFFECTS MATTER
										6.2.2
6.2.2				Standard 6.2.2 Develop a model to predict the effect of heat energy on states of matter and density. Emphasize the arrangement of particles in states of matter (solid, liquid, or gas) and during phase changes (melting, freezing, condensing, and evaporating). (PS1.A, PS3.A)	Engineering Design: 05 Out of Phase *Supplies:*					6.2.3
										6.2.4
										6.3.1
										6.3.2
										6.3.3
6.2.3				Standard 6.2.3 Plan and carry out an investigation to determine the relationship between temperature, the amount of heat transferred, and the change of average particle motion in various types or amounts of matter. Emphasize recording and evaluating data, and communicating the results of the investigation. (PS3.A)	Engineering Design: 06 Heat My House *Supplies:*					6.3.4
										6.4.1
										6.4.2
										6.4.3
										6.4.4
6.2.4				Standard 6.2.4 Design an object, tool, or process that minimizes or maximizes heat energy transfer. Identify criteria and constraints, develop a prototype for iterative testing, analyze data from testing, and propose modifications for optimizing the design solution. Emphasize demonstrating how the structure of differing materials allows them to function as either conductors or insulators. (PS3.A, PS3.B, ETS1.A, ETS1.B, ETS1.C						6.4.5
Quarter 2: Ecosystems										
6.4.1 FOSS KIT POPULATIONS AND ECOSYSTEMS				Standard 6.4.1 Analyze data to provide evidence for the effects of resource availability on organisms and populations in an ecosystem. Ask questions to predict how changes in resource availability affects organisms in those ecosystems. Examples could include water, food, and living space in Utah environments. (LS2.A)						
Milkweed bugs investigation (ALTERNATE: Butterfly Investigation.)										
Part 1: What does a population of insects need to survive in a classroom?										
Part 2: What needs to be considered when building a habitat for insects?				https://researchquest.org/uinta/						
Part 3: How do insects reproduce & grow?										
6.4.2				Standard 6.4.2 Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems. Emphasize consistent interactions in different environments such as competition, predation, and mutualism. (LS2.A)						
6.4.3				Standard 6.4.3 Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem. Emphasize food webs and the role of producers, consumers, and decomposers in various ecosystems. Examples could include Utah ecosystems such as mountains, Great Salt Lake, wetlands, and deserts. (LS2.B)						
Google Slides 6.4.4 Stability of Populations				Standard 6.4.4 Construct an argument supported by evidence that the stability of populations is affected by changes to an ecosystem. Emphasize how changes to living and nonliving components in an ecosystem affect populations in that ecosystem. Examples could include Utah ecosystems such as mountains, Great Salt Lake, wetlands, and deserts. (LS2.C)						
Episode 1: How did wolves change the flow of the rivers in Yellowstone?										
Quarter 3: Weather										
6.4.5				Standard 6.4.5 Evaluate competing design solutions for preserving ecosystem resources and biodiversity based on how well the solutions maintain stability within the ecosystem. Emphasize obtaining, evaluating and communicating information of differing design solutions. Examples could include policies affecting ecosystems, responding to invasive species or solutions for the preservation of ecosystem resources specific to Utah, such as air and water quality and prevention of soil erosion. (LS2.C, LS4.D, ETS1.A, ETS1.B, ETS1.C)						
Google Drive 6.3.1 Clarke Planetarium				Standard 6.3.1 Develop a model to describe how the cycling of water through Earth's systems is driven by energy from the Sun, gravitational forces, and density. (ESS2.C)						
				Teacher Resources:	**Supplemental Resources:**					
					Engineering: 02 Paint the Sky with the Stars					
6.3.2				Standard 6.3.2 Investigate the interactions between air masses that cause changes in weather conditions. Collect and analyze weather data to provide evidence for how air masses flow from regions of high pressure to low pressure causing a change in weather. Examples of data collection could include field observations, laboratory experiments, weather maps, or diagrams. (ESS2.C, ESS2.D)						
6.3.3				Standard 6.3.3 Develop and use a model to show how unequal heating of Earth's systems cause patterns of atmospheric and oceanic circulation that determine regional climates. Emphasize how warm water and air move from the equator toward the poles. Examples of models could include Utah regional patterns such as lake-effect and wintertime temperature inversions. (ESS2.C, ESS2.D)						
Quarter 4: Astronomy										
6.3.4				Standard 6.3.4 Construct an explanation supported by evidence for the role of the natural greenhouse effect in Earth's energy balance, and how it enables life to exist on Earth. Examples could include comparisons between Earth and other planets such as Venus and Mars. (ESS2.D)						
Google Drive 6.1.1 Now you see me, Now you Don't				Standard 6.1.1 Develop and use a model of the Sun-Earth-Moon system to describe the cyclic patterns of lunar phases, eclipses of the Sun and Moon, and seasons. Examples of models could be physical, graphical, or conceptual. (ESS1.A, ESS1.B)	Engineering Design: 01 Eudoxus of the Universe *Supplies:*					
6.1.2 Mission to Mars CANVAS 6.1.2 Mission to Mars Google Drive 6.1.2 Mission to Mars		For Mini experiment one: Flour, Marbles, Paper, Bowl or plastic container For Rocket: two-2 liter bottles, raw egg in a ziploc bag (1 per rocket), Bubble wrap Cotton balls fabric tape ziploc bags rubber bands timer scale... other building supplies may be used.		Standard 6.1.2 Develop and use a model to describe the role of gravity and inertia in orbital motions of objects in our solar system. (ESS1.B)						
Episode 1: Hail Mary Passes and drawing trajectories	30 min			PD: https://www.loom.com/share/15a2fcba01c54ec6b713fbd4cd6812f7						
Episode 2: Mass experiments with 'asteroids' Students watch a section from the Roving to Mars documentary.	15min			**Teacher Resources:**	**Supplemental Resources:**					
Students study the various models that humans have used to explore space and list pros or cons of each that they can determine.	15 min				Engineering Design: 02 Paint the Sky with Stars *Supplies:*					
Students design their own rocket ship to transport a Rover (raw egg) to Mars, students must deigsn and build a capsule, test then rebuild.	Split this over multiple days- it will take ~2-4 hours.									
6.1.3				Standard 6.1.3 Use computational thinking to analyze data and determine the scale and properties of objects in the solar system. Examples of scale could include size and distance. Examples of properties could include layers, temperature, surface features, and orbital radius. Data sources could include Earth and space-based instruments such as telescopes and satellites. Types of data could include graphs, data tables, drawings, photographs, and models. (ESS1.A, ESS1.B)	Engineering Design: 03 Mission to Mars *Supplies:*					
				crash course distances						

SIXTH GRADE STEM STORYLINES

Engineering Lessons: https://sites.google.com/provo.edu/pcsd-innovative-learning/home/teachers/integrated-stem-lessons/stem?authuser=0

		6th SEEd Module Storylines	Approx. Pacing	Supplies needed (Every storyline requires a student journal) Most Storylines use a google slideshow, but it is not always required to use it:	Cross-Curricular Activities	Utah Core State SEEd Alignment	Science and Engineering Practice (SEP)	Cross-Cutting Standards (CC)	Disciplinary Core Ideas (DCI) codes		Assessments		Quick Links to SEEd CANVAS Modules.		Quick Links to Amy's Drive (google slides, student journal files)	

SIXTH GRADE STEM STORYLINES

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		6th SEEd Module Storylines	Approx. Pacing	Supplies needed (Every storyline requires a student journal) Most Storylines use a google slideshow, but it is not always required to use it:	Cross-Curricular Activities	Utah Core State SEEd Alignment	Science and Engineering Practice (SEP)	Cross-Cutting Standards (CC)	Disciplinary Core Ideas (DCI) codes		Assessments		Quick Links to SEEd CANVAS Modules.		Quick Links to Amy's Drive (google slides, student journal files)	

Having trouble accessing a module?
Access all the original files here.
Modules highlighted red are not availble yet.

Kindergarten	1st	2nd	3rd	4th	5th	6th
K.1.1 & K.1.2 Weather Patterns .	1.1.1 & 1.1.3 Here comes the Sun (Predictable movement of the Sun, Moon & Stars)	2.1.1 & 2.1.2 Earth's Changing Surface (Landforms)	3.1.1 , 3.1.2 & 3.1.3 Weather and Climate Patterns	4.1.1 Organisms Structures & Functions	5.1.1 Earth Features	6.1.1
K.1.3 & K.1.4 Effect of Sunlight	1.1.2 It's that time of year! (Patterns of Sunlight, observed over a Year)	2.1.3 Land Changes (Quick & Slow Land Changes)	3.2.1 Circle of Life (Life Cycles)	4.1.2 Memory Systems (How Animals Respond)	5.1.2 Saltwater and Freshwater	6.1.2 Mission to Mars
K.1.4 Building a Shade Shelter - UNDER REVISION	1.1.3 Turn on the Sunlight (Patterns of Daylight)	2.2.1 & 2.2.2 Habitats & Animals	3.2.2 Oh I just Can't Wait to be King! (Inherited Traits)			6.1.3
K.2.1 & K.2.2 Survival Needs of Animals	1.2.1 Effects of Sunlight on Plant Growth	2.2.3 Hand Pollinators (Structure & Function of Animals/Birds)	3.2.3 Slimy, Yet Satisfying! (Environments affect traits)	4.1.3 Oh, Fossil! Where are you? (Fossils & Ancient Environments)	5.1.3 Weather or Not	6.2.1 Energy Affects Matter
K.2.1 & K.2.2 Survival Needs of Plants	1.2.2 & 1.2.3 Animals & Habitats	2.2.4 Biomimicry (How Humans Mimic Nature)	3.2.4 Be Prepared (How traits help survival)	4.1.4 Call to Order (Rock Layers)	5.1.4 Amazing Race (Earth's Systems: Geo, Bio, Hydro, Atmo)	6.2.2
K.2.3 & K.2.4 Survival of the Creative (Survival Needs of Humans)	1.2.4 Animals & Survival	2.3.1 Properties of Matter	3.2.5 & 3.2.6 Remember Who You Are (How an ecosystem works together to support survival & Changes in an environment)	4.2.1 Take me out to the ballgame (Energy Transfers: Cause & Effect)	5.1.5 Survivor (Reduce Effects of natural disasters)	6.2.3
K.2.4 Reduce, Reuse, Recycle, Survival Needs of Humans	1.3.1 The Sound of Music (How Vibrations create Sound)	2.3.2 Building a Birdhouse (Properties of Matter influence function)	3.3.1 Force Affects Motion	4.2.2 Take me out with the crowd (Energy Transfer: Collisions)	5.1.5 Shake it up!	6.2.4
K.3.1 & K.3.2 Force & Motion	1.3.2 & 1.3.3 This Little Light of Mine (Experiments with Light)	2.3.3 Lego Hotel (Objects can be disassembled and reshaped)	3.3.2 Predicting Motion	4.2.3 Buy me some peanuts and Crackerjacks (Energy Transfer: Sound & Heat)	5.2.1 Composition of Matter	6.3.1
	1.3.4 Can you hear me now? (Communicating using sound or light.)	2.3.4 I'm Melting (Changes in Matter caused by heating & cooling)	3.3.3 Gravity!		5.2.2 Properties of Matter	6.3.2
			3.3.4 A Day at the Races (Magnetic & Electric Interactions)	4.2.4 Harry Potter Wands (Energy Transfer: Sound & Light)	5.2.3 & 5.2.4 Changes of Matter & Conservation of Matter	6.3.3
			3.3.5 Maglev trains	4.3.1 Waves	5.3.1 Photosynthesis	6.3.4
				4.3.2 I see you now (Light Waves)	5.3.2 Move it, Move it	6.4.1
				4.3.3. Communicating with Patterns	5.3.3 Welcome to the Weakest Link/Strongest Link	6.4.2
				4.4.1 & 4.4.2 Clark Planetarium	5.3.4 Rescue Environments with Utah Lake Study	6.4.3
				4.4.1 Brightness of Stars	5.3.4 MINING & RECLAMATION	6.4.4
				4.4.2 Making Sense of Shadows	5.3.4 Be Aware of Our Air	6.4.5

Kindergarten	1st	2nd	3rd	4th	5th	6th
K.1.1 & K.1.2 Weather Patterns .	1.1.1 1.1.2 & 1.1.3 Astronomy	2.1.1 & 2.1.2 Earth's Changing Surface (Landforms)	3.3.1 Force Affects Motion	4.1.1 Organisms Structures & Functions	5.1.1 Earth Features	6.2.1 Energy Affects Matter
K.1.3 & K.1.4 Effect of Sunlight	1.1.1 & 1.1.3 Here comes the Sun (Predictable movement of the Sun, Moon & Stars)	2.1.3 Land Changes (Quick & Slow Land Changes)	3.3.2 Predicting Motion	4.1.2 Memory Systems (How Animals Respond)	5.1.2 Saltwater and Freshwater	6.2.2
K.1.4 Building a Shade Shelter - UNDER REVISION	1.1.2 It's that time of year! (Patterns of Sunlight, observed over a Year)	2.2.1 & 2.2.2 Habitats & Animals	3.3.3 Gravity!			6.2.3
K.2.1 & K.2.2 Survival Needs of Animals	1.1.3 Turn on the Sunlight (Patterns of Daylight)	2.2.3 HAND POLLINATORS (Structure & Function of Animals/Birds)	3.3.4 A Day at the Races (Magnetic & Electric Interactions)	4.1.3 Oh, Fossil! Where are you? (Fossils & Ancient Environments)	5.1.3 Weather or Not	6.2.4
K.2.1 & K.2.2 Survival Needs of Plants	1.2.1 Effects of Sunlight on Plant Growth	2.2.4 Biomimicry (How Humans Mimic Nature)	3.3.5 Maglev trains	4.1.4 Call to Order (Rock Layers)	5.1.4 Amazing Race (Earth's Systems: Geo, Bio, Hydro, Atmo)	6.4.1 FOSS: Populations and Ecosystems
K.2.3 & K.2.4 Survival of the Creative (Survival Needs of Humans)	1.2.2 & 1.2.3 Animals & Habitats	2.3.1 PROPERTIES OF MATTER	3.3.5 Solving Problems with Magnets	4.2.1 Take me out to the ballgame (Energy Transfers: Cause & Effect)	5.1.5 Survivor (Reduce Effects of natural disasters)	6.4.2
K.2.4 REDUCE, REUSE, RECYCLE, Survival Needs of Humans	1.2.4 Animals & Survival	2.3.2 Building a Birdhouse (Properties of Matter influence function)	3.2.1 Circle of Life (Life Cycles)	4.2.2 Take me out with the crowd (Energy Transfer: Collisions)	5.1.5 Shake it up!	6.4.3
K.3.1 & K.3.2 Force & Motion	1.3.1 The Sound of Music (How Vibrations create Sound)	2.3.3 Lego Hotel (Objects can be disassembled and reshaped)	3.2.2 Oh I just Can't Wait to be King! (Inherited Traits)	4.2.3 Buy me some peanuts and Crackerjacks (Energy Transfer: Sound & Heat)	5.2.1 Composition of Matter	6.4.4 Stability of Populations
	1.3.2 & 1.3.3 This Little Light of Mine (Experiments with Light)	2.3.4 I'm Melting (Changes in Matter caused by heating & cooling)	3.2.3 Slimy, Yet Satisfying! (Environments affect traits)		5.2.2 Properties of Matter	6.4.5
	1.3.4 Can you hear me now? (Communicating using sound or light.)		3.2.4 Be Prepared (How traits help survival)	4.2.4 Harry Potter Wands (Energy Transfer: Sound & Light)	5.2.3 & 5.2.4 Changes of Matter & Conservation of Matter	6.3.1 Clark Planetarium
			3.2.5 & 3.2.6 Remember Who You Are (How an ecosystem works together to support survival & Changes in an environment)	4.3.1 Waves	5.3.1 Photosynthesis	6.3.2
			3.2.6 Noise Pollution	4.3.2 I see you now (Light Waves)	5.3.2 Move it, Move it	6.3.3
			3.1.1 , 3.1.2 & 3.1.3 Weather and Climate Patterns	4.3.3. Communicating with Patterns	5.3.3 Welcome to the Weakest Link/Strongest Link	6.3.4
				4.4.1 & 4.4.2 Clark Planetarium	5.3.4 Rescue Environments with Utah Lake Study	6.1.1 Now you see me, Now you don't
				4.4.1 Brightness of Stars	5.3.4 MINING & RECLAMATION	6.1.2 Mission to Mars
				4.4.2 Making Sense of Shadows	5.3.4 Be Aware of Our Air	6.1.3

1st Term
2nd Term
3rd Term
4th Term

Kindergarten	1st	2nd	3rd	4th	5th	6th
K.1.1	1.1.1	2.1.1	3.3.1	4.1.1	5.1.1	6.2.1
K.1.2	1.1.2	2.1.2	3.3.2	4.1.2	5.1.2	6.2.2
K.1.3	1.1.3	2.1.3	3.3.3	4.1.3	5.1.3	6.2.3
K.1.4	1.2.1	2.2.1	3.3.4	4.1.4	5.1.4	6.2.4
K.2.1	1.2.2	2.2.2	3.3.5	4.2.1	5.1.5	6.4.1
K.2.2	1.2.3	2.2.3	3.2.1	4.2.2	5.2.1	6.4.2
K.2.3	1.2.4	2.2.4	3.2.2	4.2.3	5.2.2	6.4.3
K.2.4	1.3.1	2.3.1	3.2.3	4.2.4	5.2.3	6.4.4
K.3.1	1.3.2	2.3.2	3.2.4	4.3.1	5.2.4	6.4.5
K.3.2	1.3.3	2.3.3	3.2.5	4.3.2	5.3.1	6.3.1
	1.3.4	2.3.4	3.2.6	4.3.3	5.3.2	6.3.2
			3.1.1	4.4.1	5.3.3	6.3.3
			3.1.2	4.4.2	5.3.4	6.3.4
			3.1.3			6.1.1
						6.1.2
						6.1.3

4th Grade Assessment Blueprint			5th Grade Assessment Blueprint			6th Grade Assessment Blueprint		
Quarter #1			Quarter #1			Quarter #1		
Standards	# of questions (17)	% of Total	Standards	# of questions (9)	% of Total	Standards	# of questions (14)	% of Total
4.1.1	5	29%	5.1.1	1	11%	6.2.1	3	21%
4.1.2	3	18%	5.1.2	5	56%	6.2.2	2	14%
4.1.3	4	24%	5.1.3	3	33%	6.2.3	4	29%
4.1.4	5	29%				6.2.4	5	36%
Quarter #2			Quarter #2			Quarter #2		
Standards	# of questions (12)	% of Total	Standards	# of questions (7)	% of Total	Standards	# of questions (24)	% of Total
4.2.1	4	33%	5.1.4	2	29%	6.4.1	4	17%
4.2.2	4	33%	5.1.5	3	43%	6.4.2	6	25%
4.2.3	4	33%	5.2.1	2	29%	6.4.3	5	21%
						6.4.4	5	21%
						6.4.5	4	17%
Quarter #3			Quarter #3			Quarter #3		
Standards	# of questions (12)	% of Total	Standards	# of questions (15)	% of Total	Standards	# of questions (16)	% of Total
4.2.4	4	33%	5.2.2	5	33%	6.3.1	6	38%
4.3.1	4	33%	5.2.3	3	20%	6.3.2	6	38%
4.3.2	4	33%	5.2.4	3	20%	6.3.3	4	25%
			5.3.1	4	27%			
Quarter #4			Quarter #4			Quarter #4		
Standards	# of questions (16)	% of Total	Standards	# of questions (11)	% of Total	Standards	# of questions (18)	% of Total
4.3.3	8	50%	5.3.2	4	36%	6.1.1	3	17%
4.4.1	5	31%	5.3.3	4	36%	6.1.2	5	28%
4.4.2	3	19%	5.3.4	3	27%	6.1.3	4	22%
						6.3.4	6	33%

In this spreadsheet you will find links to Granite's science slideshows for distance learning. The slideshows are built to be assigned in Google Classroom, so that students each receive their own copy. There are links to audio and video directions within the slideshows that are set to Granite School District only. Please DO NOT share these directly with students or teachers. We end up getting tons of requests to access things! Instead, feel free to copy the slideshows (the link will force you to make a copy) and then reformat them to work with whatever platform you are using.

Also, we have used a lot of Mystery Science when we could, which is why you will find that some standards in a strand are not covered by GSD slideshows.

Kindergarten

Standard	Force Copy Link to Slideshow	Notes
K.1.1	https://docs.google.com/presentation/d/1W4ngvAiBvoEproRcHVr9l6ZdyS5HoNY74hIwBICXbUM/copy?usp=sharing	Weather Measurement Device
K.1.1	https://docs.google.com/presentation/d/17kzoeEHWmso0y8nEWF51LfUeefeC2mUDvNNy2LSWNpw/copy?usp=sharing	5 Senses and Weather
K.1.1 and K.1.2	https://docs.google.com/presentation/d/1AHAyIQ8MwBgW0v0iTBIXRi84JZ_I84GDX1tnNZDSNz8/copy?usp=sharing	What to Wear and Weather
K.1.3	https://docs.google.com/presentation/d/1kM7bV_IHZzV0JMKOOWNVOmYCKkcDJ-OYqAE-DrP8sw4/copy?usp=sharing	Sunlight on Surfaces
K.1.4	https://docs.google.com/presentation/d/12vhHDPLy2zqvUxdEYH-dAMDqVJEYVl6ZoXN3ozEZnXk/copy?usp=sharing	Melting Popsicles
K.3.1	https://docs.google.com/presentation/d/16PUaOrnZGTuYe6XB3Ink-i2MAVuC2KIT5bA0ZTwbiBI/copy?usp=sharing	Push or Pull
K.3.1	https://docs.google.com/presentation/d/1GDOV827TslVZjBOmj-fUWCKE__aNdKt68_lbObBGlHo/copy?usp=sharing	Push or Pull Fast or Slow
K.3.1	https://docs.google.com/presentation/d/1q8XTG3rB2g_9dvwGpBvBSKPNfVz-ry0Aa5riTUkACqw/copy?usp=sharing	Push of Pull Change Direction
K.3.2	https://docs.google.com/presentation/d/1Bx8OgdSSnpTL611ldpy4JNyPSbi5qgSo4BWd_f8ePY8/copy?usp=sharing	Collisions
K.3.2	https://docs.google.com/presentation/d/1kgkfGYL18HrRuD6yUU-DUaO2jx0QUU8cudGS6l7Vsnk/copy?usp=sharing	Park a Toy Car Challenge

1st Grade

Standard	Force Copy Link to Slideshow	Notes
1.2.1	https://docs.google.com/presentation/d/10Rxe7Gt1tnB__bmRxzc0RKW2s7qs7Mt5wxhYXU9XIA0/copy?usp=sharing	Observe plants
1.2.1	https://docs.google.com/presentation/d/1cR5Sc6LCXWrKmRJP21Ydfjibvu6pwrC3y5GusfNoHzg/copy?usp=sharing	Plants Needs
1.2.2	https://docs.google.com/presentation/d/1CgleBsc-HV_3Avjj45bN7G1iWh1UsgFE3lUi36Bt4C0/copy?usp=sharing	Parts of Animals
1.2.2	https://docs.google.com/presentation/d/1c88OdKLDnHYsHN00PNUGr2ZIb7rXSafkzj0ez834Si4/copy?usp=sharing	Plants Needs
1.2.2	https://docs.google.com/presentation/d/1PHcTUzyu30YNfTx40hqxQ4SmExzD49Tn4VpEnMp5UqY/copy?usp=sharing	Habitats
1.2.2	https://docs.google.com/presentation/d/1CKfLjdkJd_pylhIckUIloYUm9oy60GDuJzvOBLykzMc/copy?usp=sharing	More Habitats
1.2.2	https://docs.google.com/presentation/d/1gikduml03xczlqvugH4oT7RuXHilGeuVM2Bpq8ld7TQ/copy?usp=sharing	Adaptations
1.2.2	https://docs.google.com/presentation/d/11KPVAwknXtJ67jZ4Nrun0FpWF4S0_KhDSYjaJdF22ww/copy?usp=sharing	Where in the World
1.2.2	https://docs.google.com/presentation/d/19m3Q26n47mSDcyYpiM-vztc-Im8_kAijxIH8d_EsjJ8/copy?usp=sharing	Feet
1.2.3	https://docs.google.com/presentation/d/1teVSDBhdx2PCUkUerxjUnxksNProZszVOCFP0TUlbZg/copy?usp=sharing	Baby Animals
1.2.3	https://docs.google.com/presentation/d/1EyhFP_v-sc2jVMPn-st4aBNCEnEyISWjpHB7NZcG8H4/copy?usp=sharing	Animals and Offspring
1.2.4	https://docs.google.com/presentation/d/13wz16xz2pfeSy8NdYuzoQaLI6vPdMQH3d0H9oc3RAMk/copy?usp=sharing	Parent and Offspring Behaviors
1.2.4	https://docs.google.com/presentation/d/15RD82F_guylyElx_fnYtloZRrSgti07KNwOaljC_w88/copy?usp=sharing	Care for a Baby Bird

2nd Grade

Standard	Force Copy Link to Slideshow	Notes
2.2.1	https://docs.google.com/presentation/d/1v0xnr6Oky_wzEkwG01Gi4rrDatzecwy_JBjUikFZu8I/copy?usp=sharing	I Wanna Iguana
2.2.1	https://docs.google.com/presentation/d/1wim5xQPC5sxOQOEJ_ppAep_7L_JxLlyhzzJYnql-DzM/copy?usp=sharing	Habitat Intro
2.2.1	https://docs.google.com/presentation/d/1GfWQoUnqvngcYetYs9B3dl9tB0BzJd02i6Bh2SJkczs/copy?usp=sharing	Backyard Naturalist
2.2.1	https://docs.google.com/presentation/d/1GfWQoUnqvngcYetYs9B3dl9tB0BzJd02i6Bh2SJkczs/copy?usp=sharing	Pill Bugs
2.2.1	https://docs.google.com/presentation/d/1GfWQoUnqvngcYetYs9B3dl9tB0BzJd02i6Bh2SJkczs/copy?usp=sharing	Water Habitats
2.2.1	https://docs.google.com/presentation/d/1CCuweWN_qCF8JymoOL0xGYstjlo0cQe8k10me0xGMWQ/copy?usp=sharing	Polar Habitats
2.2.2	https://docs.google.com/presentation/d/1CCuweWN_qCF8JymoOL0xGYstjlo0cQe8k10me0xGMWQ/copy?usp=sharing	Bird Beaks
2.2.2	https://docs.google.com/presentation/d/1JvwX0TbO44aVCZyOk27fp77lb0GdKYo7LjMzdZDtrTo/copy?usp=sharing	Design Habitat
2.2.2	https://docs.google.com/presentation/d/1hjGhVyhvm0-nne14Od5u3ON4sRCaQPlfgBEH-7UFzsw/copy?usp=sharing	Design a Habitat
2.2.3	https://docs.google.com/presentation/d/16UA4nsuXNaNRKGGHVFvM4ryzE2FHfHGG8c2LJOSxs0k/copy?usp=sharing	How Seeds Move
2.2.3	https://docs.google.com/presentation/d/1WK2Go7ovDc1VRy7704UIvFsLhtk6SyvOhdObXeH_nVw/copy?usp=sharing	Model How Seeds Move
2.2.4	https://docs.google.com/presentation/d/1RqJkMxH09Hvyi-ZN4pMsJq3czpIPE_TSTs3qruVeBqM/copy?usp=sharing	Adaptations and why we copy them
2.2.4	https://docs.google.com/presentation/d/1h1WyzwpwpZR-r4CZXiusosDj2aFxH8bsXxY4DwQSq5Y/copy?usp=sharing	Design a Solution Part 1
2.2.4	https://docs.google.com/presentation/d/1odz73xpmtNP74nm4LF4WDH4nTFJftiboRx8SBY10S9c/copy?usp=sharing	Design a Solution Part 2

3rd Grade

Standard	Force Copy Link to Slideshow	Notes
3.2.2	https://docs.google.com/presentation/d/1TDoPNW60poX7kLFJWYKLEUuuzqtOYk1zVHN2ddR9ns4/copy?usp=sharing	Traits in Cats
3.2.2	https://docs.google.com/presentation/d/1SM-WOKLxVGfUoV8fSTzeJVHXeO8mBst5UUKIS2ETIPg/copy?usp=sharing	Traits Assessments
3.2.4	https://docs.google.com/presentation/d/1TRg4RA6kRvrJDEl-w6vyyUFoBO8GzqPD_IQJlk8-JIs/copy?usp=sharing	Butterflies
3.2.4	https://docs.google.com/presentation/d/1ecK0RA69MdKH-qwPPstq4H2MosATL4VxsqA7359iOPc/copy?usp=sharing	Rock Pocket Mice
3.2.5	https://docs.google.com/presentation/d/1Fk--25angmuE0GwJrrvgj8d7xzfKtwxxArwuSpRMa30/copy?usp=sharing	Survival in Habitats
3.2.5	https://docs.google.com/presentation/d/1rtkZFtA3eLydeMhWH6Dwb_BxPUec4SCB3lglmXDVsOo/copy?usp=sharing	Rabbits in Different Habitats
3.2.6	https://docs.google.com/presentation/d/1rtkZFtA3eLydeMhWH6Dwb_BxPUec4SCB3lglmXDVsOo/copy?usp=sharing	Helping Little Brown Bats

4th Grade

Standard	Force Copy Link to Slideshow	Notes
4.1.1	https://docs.google.com/presentation/d/1c2UNgmkAEYGwE55AoZQz0ce_99EvEKn2At4Bjp3UVdY/copy?usp=sharing	Animal Structure Function
4.1.1	https://docs.google.com/presentation/d/1DcdG6t3EVvGcyZ0_ZA5LYdWEfvEUTDU84LCRJ61BYPM/copy?usp=sharing	Plant Structure Function
4.1.2	https://docs.google.com/presentation/d/17cGjqzxB49A94DIFPnECEjRNx9DiZYiDqC3XECv2Ez8/copy?usp=sharing	Bat Phenomenon
4.1.2	https://docs.google.com/presentation/d/1sL5Td_qUTWkJLbxwUo_NAdrhWLDB1L9e-ys1FLOjAWA/copy?usp=sharing	Bat Phenomenon cont'd
4.1.3	https://docs.google.com/presentation/d/1VZBybPYIR-dwPg2sPGk5F1Kd96wPeG9EFtlE07oC1JU/copy?usp=sharing	Knightia Fish Fossils
4.1.4	https://docs.google.com/presentation/d/1VZBybPYIR-dwPg2sPGk5F1Kd96wPeG9EFtlE07oC1JU/copy?usp=sharing	Layers in Grand Canyon
4.2.1	https://docs.google.com/presentation/d/1ew5ngoKoAPmTGiNSu9VqlJiREX42OsK908ghLX3UIGU/copy?usp=sharing	Energy in Sports
4.2.3	https://docs.google.com/presentation/d/1nE50LptWdYVpRBohskbi6t1mIKVcXF_Z5BseqSvUL1Y/copy?usp=sharing	Short Lesson On Batteries - Mystery Science
4.2.4	https://docs.google.com/presentation/d/1JkE2lui7BWOPxvq9dumG3tNuSfq6pmyfofFUXP4VBsQ/copy?usp=sharing	Solar Ovens
4.3.1	https://docs.google.com/presentation/d/1ydROa9arlnOU8E16e3s0ieANSZ6CRguQS3Y5hh11Qfo/copy?usp=sharing	Wave Pools

5th Grade

Standard	Force Copy Link to Slideshow	Notes
5.1.4	https://docs.google.com/presentation/d/1vfM0KyfLiIhUedPznSm4UsBDlD2wtprUMd27X47g7S0/copy?usp=sharing	Intro to Systems
5.1.4	https://docs.google.com/presentation/d/1rh7FOkpCCCFmBbLFIVlq8OXN9nr4RxhMe1oNTXoBPbY/copy?usp=sharing	Mt. St. Helens
5.1.5	https://docs.google.com/presentation/d/1fEJ0rUcfoCHMiDQFD3hvhghs_OBH0YMsdGSiyRsuJjc/copy?usp=sharing	Engineering for Earthquakes
5.2.1	https://docs.google.com/presentation/d/11x3bS8qn_qlVAHViY9rOLHBFsZKSD-wa8OWguoGycL8/copy?usp=sharing	What is Air?
5.2.1	https://docs.google.com/presentation/d/1JeLdRb4eNHotnWv6dexQtYFn2XAm5R5by7xL07ekgN8/copy?usp=sharing	Dissolving
5.2.2	https://docs.google.com/presentation/d/16yy-g67X7HDUe1Pbjdk6f4TnfVYGtin6OPdAXCKcvPw/copy?usp=sharing	Mystery Liquids

NEARPODS from NEBO SCHOOL DISTRICT -- Thank you Nate Bartholomew.				
KINDERGARTEN				
Lesson	Standard	Phenomenon	Nearpod Lesson Link	Google Slides Link
	k.1.1			
k.1.2 Effects of forecasted weather o	k.1.2	Observe different people wearing different clothing d	https://share.nearpod.com/e/TKyT7naGv9	https://docs.google.com/presentation/d/18BFTYytSyd61ZsZhfKLXcdazlslR_v5NFiQTRobBYv4/edit?usp=sharing
k.1.3 Investigate the Effect of Sunligh	k.1.3	When I touch a slide on a summer afternoon the met	https://share.nearpod.com/e/um2zfWLPv9	https://docs.google.com/presentation/d/1lKYEAgrYo3k2nnGBCGzmmHFRsS68mW2tl81wsmMNhg0/edit?usp=sharing
k.1.4 How to keep cool in the hot sur	k.1.4	Puppies are waiting in the hot sun	https://share.nearpod.com/e/5QVd55rAR9	https://docs.google.com/presentation/d/1jAbneOcCcg1LLBnT19adywa4XFUWybWCpiEHEHB-i38/edit?usp=sharing
FIRST GRADE				
Lesson	Standard	Phenomenon	Nearpod Lesson Link	Google Slides Link
1.1.1 Movement of the Sun, Moon, a	1.1.1	Two images of the sky at the same location, one duri	https://share.nearpod.com/e/zmRmJOyzv9	https://docs.google.com/presentation/d/1zEF7NFNOCprRDEuPkwqgMbwiiY_7spiudDGXEmVnglU/edit?usp=sharing
1.1.1 Pattern of Sunrise and Sunset	1.1.1	We observe the same pattern each day of the Sun ar	https://share.nearpod.com/e/fLn1ZVJTP9	https://docs.google.com/presentation/d/1vRj3mMeB_XOSo5iekQzGY3mATRgxlWstT32ZcljQl4M/edit?usp=sharing
1.1.2 Patterns observed in the amou	1.1.2	Two images of the same place at the same time of da	https://share.nearpod.com/e/36tJConEv9	https://docs.google.com/presentation/d/1y0fJX8wSPIL5MS1frMoD06oCAs2cH5lHw8iEalz_IDc/edit?usp=sharing
SECOND GRADE				
Lesson	Standard	Phenomenon	Nearpod Lesson Link	Google Slides Link
Terms 1 and 2				
2.3.1 Properties of Plastics and Recy	2.3.1	Observe Plastics that we see in our homes	https://share.nearpod.com/e/cPr1gzi8t9	https://docs.google.com/presentation/d/1OsEV7JqI2_abbwutgehOttolIVFZK7PGy9twa72uQx0/edit?usp=sharing
2.3.1 Properties of Matter-Objects th	2.3.1	Each of the following objects have different propertie	https://share.nearpod.com/e/Vfcx5Q3IP9	https://docs.google.com/presentation/d/1_NmTybI22Fzyxlg91b4-NZwJhuALHjpASVW4lMdfvWo/edit?usp=sharing
2.3.2 Properties of Materials Influenc	2.3.2	The two bridges in the pictures are built out of differe	https://share.nearpod.com/e/S2LIj5PrNab	https://docs.google.com/presentation/d/1mvJP6iYyzrPoUkyluEhb3mvPBXNFvKateZuQ-TPZb6o/edit?usp=sharing
2.3.3 Objects made of the same mat	2.3.3	These objects are made of the same material and ye	https://share.nearpod.com/e/oB0X7om9Oab	https://docs.google.com/presentation/d/1QJR7Ryl3Dq0rTBNeZWDARoYnWKHA6W6HEaeBqvCjXkM/edit?usp=sharing
2.3.4 Changes to Matter Caused by I	2.3.4	Wardsworth Creek frozen water	https://share.nearpod.com/e/oapQngy9t9	https://docs.google.com/presentation/d/1yzU_IA5JZOm_2uvjU07iBX6t9ihWCVgkWeINCtyrfak/edit?usp=sharing
Term 3				
	2.2.1			
	2.2.2			
	2.2.3			
	2.2.4			
Term 4				
2.1.1 Patterns of Landforms that we	2.1.1	On Google maps you can chose to look at a terrain r	https://share.nearpod.com/e/9Czg4spfNab	https://docs.google.com/presentation/d/1krlCzpSpLhtuPjGRXI36WFfJAQVDfD-tCQE67PShMug/edit?usp=sharing
2.1.2 Fast and Slow Changes to Ear	2.1.2	Look at changes to Earth's Surface in Goosenecks S	https://share.nearpod.com/e/vfO3fLRSLab	https://docs.google.com/presentation/d/1I0BFCY0erGWOSPbITLV8IT6HFH2WQx0Z03AUac-t9lw/edit?usp=sharing
THIRD GRADE				
	Standard	Phenomenon	Nearpod Lesson Link	Google Slides Link
	3.2.1	Caterpillar changes to a butterfly during its life cycle	https://share.nearpod.com/e/lJzBpRHhp9	https://docs.google.com/presentation/d/1rTx-WedszwWLhCwODUGJETkbgzmv6nEihs2bQCLgvto/edit?usp=sharing
	3.2.1	Dandelion plants grow from small seeds to mature pl	https://share.nearpod.com/e/c1JPhWTfs9	https://docs.google.com/presentation/d/1AsBKUAW9i_NaZLdzmAe_x31KqtmAwft9UqWV7EYCMZ0/edit?usp=sharing
	3.2.2	Kittens look similar to the mother cat.	https://share.nearpod.com/e/TJVOlPi499	https://docs.google.com/presentation/d/1x-ldrqgv7YRqI6YLg4LJu-Do84eNEkFfv5QsTsoXQkA/edit?usp=sharing
	3.2.2	These Kittens inherited traits from their mother and fa	https://share.nearpod.com/e/5Z4fCQb599	https://docs.google.com/presentation/d/1mo81svuWjjasi7uTAjHOhdHgEvDxlGPYcfg1V6Gy6Yw/edit?usp=sharing
	3.1.1	We can look for Patterns in Pictures to tell which Sea	https://share.nearpod.com/e/XtJvhumvbab	https://docs.google.com/presentation/d/1amCBIHS6OTcG8jfPE2eUOFjlReArUeRRyVpanBYJAjs/edit?usp=sharing
FOURTH GRADE				
Lesson	Standard	Phenomenon	Nearpod Lesson Link	Google Slides Link
1-Tennis Ball	4.2.1	I can control how far a tennis ball bounces off a wall.	https://share.nearpod.com/e/ngUK1dhVj9	https://docs.google.com/presentation/d/1H4zIxYaeAPzHMuS6cfaW9pu-poPRq1No79C0TtuGWFM/edit?usp=sharing
2-Tennis Ball kinetic Energy	4.2.1	I can control how far a tennis ball bounces off a wall.	https://share.nearpod.com/e/NDhkegSjp9	https://docs.google.com/presentation/d/1lIGfsJWvN5OR2ElOl-FU4Gnn5tlQ7efWS_w4PlOTf58/edit?usp=sharing
3-Rubber Band Moves a Paper Cube	4.2.1	A rubber band moves a paper cube when I pull it bac	https://share.nearpod.com/e/r35OLzwYq9	https://docs.google.com/presentation/d/1BO8O4GM-DQzLQjcq2kh1q4daXKDS7VzmIOUqS6GQjZ0/edit?usp=sharing
4-A ball that is kicked hard has more	4.2.1	Only 20 fields goals have been made from at least 6	https://share.nearpod.com/e/X9R7QhT2cab	https://docs.google.com/presentation/d/1eN5Q1iVBn8pl3p6E3ui7FKENhs6a-65mHSztOahMOwY/edit?usp=sharing
5-Marble Collisions	4.2.2	In the game of marbles a player has to knock the red	https://share.nearpod.com/e/zAcUUnZMeab	https://docs.google.com/presentation/d/1p56MeJD770gT2VUk1x8fZ69Z0_U77_QN028L-OGAfvI/edit?usp=sharing
6- Changes in Energy from collisions	4.2.2	We can see changes to the shape of the cars and br	https://share.nearpod.com/e/lRkyZLqoqab	https://docs.google.com/presentation/d/1kIU-mbCDrXL3z-faGSrZ2TiRF6qsLniOyVqJnoSNt3I/edit?usp=sharing
7-Energy can be transferred from pla	4.2.3	The solar panels are placed on the side of the home	https://share.nearpod.com/e/mhjNA2OrAab	https://docs.google.com/presentation/d/1cOn1L4rO1qHRwMi9dyxdMMyk034ZRDIT4lPjTs7kdjQ/edit?usp=sharing
8- Sound can be Transferred from pl	4.2.3	Sounds come from his voice and from the guitar strir	https://share.nearpod.com/e/jMLS5TgpAab	https://docs.google.com/presentation/d/1NPZtl6yGvZxNw8FYs_FsriWYmUkzF1PKu7dFQk0ZM9c/edit?usp=sharing
9-Design a device that converts ener	4.2.4	Solar panels convert energy from the Sun to heat an	https://share.nearpod.com/e/hxivNC0kPab	https://docs.google.com/presentation/d/1Z6hP0p2Raw2ldmHZWo4hBqpuXrj7emCyqvTUxsSUslM/edit?usp=sharing
FIFTH GRADE				
Lesson	Standard	Phenomenon	Nearpod Lesson Link	Google Slides Link
Term 1				
Lesson 1 Bubbles in Water	5.2.1	When I blow through a straw into water, bubbles forn	https://share.nearpod.com/e/xymnjH4PM9	https://docs.google.com/presentation/d/123JJxtm-xp3pVSMrfHNuv9wpBcAZ-jT5mtPHVx8HFbc/edit?usp=sharing
Lesson 2 States of matter resist mov	5.2.1	States of matter resist my hand's movement different	https://share.nearpod.com/e/1p2rXXw4N9	https://docs.google.com/presentation/d/18vSOLWz0wixe8yHPwrQIuOO6iRq3gxamFamYYBdFd5M/edit?usp=sharing
Lesson 3 Ice-Water-Water Vapor	5.2.1	Ice-Water-Water Vapor in the kitchen	https://share.nearpod.com/e/HmRPQ5P7X9	https://docs.google.com/presentation/d/1YDsM6sGUVZ-kB_OCRUVLX8iYGg3292ZhY9DL0IESB9Q/edit?usp=sharing
Lesson 4 Air is Matter and has Weigh	5.2.1	Air inside of a balloon doesn't seem to weigh anythin	https://share.nearpod.com/e/6clzlzlcY9	https://docs.google.com/presentation/d/1G2AU5pM4F2HDhBaa28va7T_rhTBa2to8hdtha0OMCM0/edit?usp=sharing
Lesson 5 Substances have propertie	5.2.2	Different types of matter, such as salt and sugar, hav	https://share.nearpod.com/e/BIT1XcE399	https://docs.google.com/presentation/d/1YMXf2DZZBPnyGdOYiihrbf40nwuM6BBwfkY1htLcbhA/edit?usp=sharing
Lesson 6 Matter has different Proper	5.2.2	Different types of matter have different properties	https://share.nearpod.com/e/IoIVvbtrbab	https://docs.google.com/presentation/d/1IBDRcrjUtwBHEQTrc-JxeQYqkHCEm_xDGQg_wdfHcZg/edit?usp=sharing
Lesson 7 Identifying Unknown Subst	5.2.2	The following six white powdered substances are fou	https://share.nearpod.com/e/qJW6j1Sggab	https://docs.google.com/presentation/d/1tEyVw0XNH6bJGjSvEx1FI-OL1wiPjJ5Xi2fYnTKhTmQ/edit?usp=sharing
Lesson 8 Effect of Mixing Sugar and	5.2.3	Sugar mixed with two different clear liquids results in	https://share.nearpod.com/e/LTf6rW25wab	https://docs.google.com/presentation/d/1pFjffUBkr-5bZkDisKC9IBBJNIZ5MlEmjnwaTgSS3UM/edit?usp=sharing
Lesson 9 Combining Sugar and Sulfu	5.2.3	Sugar mixed with two different clear liquids results in	https://share.nearpod.com/e/CZqcEc51rab	https://docs.google.com/presentation/d/1zEwiUgjelQjNI08wKKWTsBG3aupzdHWUW_qEScVvz6I/edit?usp=sharing
Lesson 10 Law of Conservation of M	5.2.4	The mass of a glass of ice is the same as when the i	https://share.nearpod.com/e/KXOfN9QzIab	https://docs.google.com/presentation/d/1UoCQ3dltThfilplGVrxXHI5ajTIQHvvpMuwPLwldlYc/edit?usp=sharing
Lesson 11 Law of Conservation of M	5.2.4	When burning paper, it appears that the paper loses	https://share.nearpod.com/e/FchMZnYJlab	https://docs.google.com/presentation/d/1SnmVFH_DKQXAhbBaAO9OPabtku-LIG5geVTmpgmFC1k/edit?usp=sharing
Term 2				
SIXTH GRADE				
Lesson	Standard	Phenomenon	Nearpod Lesson Link	Google Slides Link
Moon Phases Day 1	6.1.1	Through the month we see different phases of the m	https://share.nearpod.com/e/NJQZMNBvf9	https://docs.google.com/presentation/d/1PXY27eihwOOQlofruVW45Sv4S4ijZW_xpfLEPmClJ4k/edit?usp=sharing
Moon Phases Day 2	6.1.1	Looking for patterns in the Earth Moon system to ma	https://share.nearpod.com/e/FnqnvNLrf9	https://docs.google.com/presentation/d/10VO5BLbdlY8OA4MXdduX0eJ-zhhnOqPO3R6p4iMlanU/edit?usp=sharing
Moon-Day 3 When is the Moon Visib	6.1.1	Sometimes we see the Moon during the day and oth	https://share.nearpod.com/e/rqK3p7EhO9	https://docs.google.com/presentation/d/1Ul1m-9nWZvs9JLH9krx49dYiEjlv_WukApzGCFFhU5I/edit?usp=sharing
Moon-Day 4 Far Side of the Moon	6.1.1	We only see one side of the moon and some people	https://share.nearpod.com/e/OcR2EKzsf9	https://docs.google.com/presentation/d/1DOoukrYZd6CTuCJON-Mas7FCl3FC70Fb7r3V7QBh9h8/edit?usp=sharing
Moon-Day 5 Patterns in Hemisphere	6.1.1	Moon's phases follow different patterns in different H	https://share.nearpod.com/e/fFhp2sgrf9	https://docs.google.com/presentation/d/1jIHNbtDIBq8PtncILGeeGmw9xLJpOk2xqsKMFW_CNNQ/edit?usp=sharing
Moon-Day 6 Lunar Eclipses	6.1.1	You go outside to see the full moon and it changes o	https://share.nearpod.com/e/WVrrdXOsf9	https://docs.google.com/presentation/d/1jcdZfFFIyOTvM9cS2YmjkyyihS-Opl7BDF9rNU-EMuA/edit?usp=sharing
Solar Eclipse-Day 7	6.1.1	In August 2017 the Moon's shadow completely block	https://share.nearpod.com/e/UwfKWYkqC9	https://docs.google.com/presentation/d/1M8R-ID_VOns--5PYDtX6tQoTieWi125UCrZz-F2jDM0/edit?usp=sharing
What Causes Seasons--Day 8	6.1.1	Seasons are opposite in the Northern and Southern	https://share.nearpod.com/e/FrVkuybzC9	https://docs.google.com/presentation/d/1DWFlDvk1FKbNaROnrcW_B5ajsWA-Y58i03FbuZw0S-0/edit?usp=sharing
Seasons Length of Day, Angle of Sur	6.1.1	On June 21st Utah has about 15 hours of sunlight. C	https://share.nearpod.com/e/CiktkluSZ9	https://docs.google.com/presentation/d/1L4pW_OnFeM63zf4pIQuUZ5pcN6EltasQX1DU19OaVaM/edit?usp=sharing
Earth's Orbit around the Sun	6.1.2	The Earth orits the Sun without drifting away or being	https://share.nearpod.com/e/zcBzEFRp09	https://docs.google.com/presentation/d/19bBTC1H1k3D-Ez9A3-JVJoir28lj0kXYC5BnkhFFQ2E/edit?usp=sharing
Planets Orbit around the Sun	6.1.2	The planets orbit the Sun in the system without driftir	https://share.nearpod.com/e/ME4RXnzs19	https://docs.google.com/presentation/d/1FG0LSqFJyl41g4NXbXDIEufz8Xsh23y7C3D3tCOn-Is/edit?usp=sharing
Inertia in the Solar System	6.1.2	A marble travels in a circular pattern (orbit) inside of a	https://share.nearpod.com/e/eUFK6OQ1cab	https://docs.google.com/presentation/d/1wka4L-XnWw-IFmXhkM_783K6F5vCpwWpl_UuaSHZwc4/edit?usp=sharing
To the Moon and Back	6.1.3	Earth's Moon is the only place beyond Earth where h	https://share.nearpod.com/e/z1Oggr6Fmab	https://docs.google.com/presentation/d/1amGxF61_vYlvilOS0jQj_cFHdnH48fQS_x4QZRh1WCw/edit?usp=sharing
Galileo's Discoveries	6.1.3	From our point of view it appears that the Sun, Moon	https://share.nearpod.com/e/GqTFBZProab	https://docs.google.com/presentation/d/1ChfFQATu0MstP_hEBmMMSuUFQH5nVY0nJEkTv0C7Ags/edit?usp=sharing
Size and Scale of Objects in the Sola	6.1.3	Observe a model of the solar system.	https://share.nearpod.com/e/pRaW9AMfXab	https://docs.google.com/presentation/d/1XYwYsF-Fv0NMbBoPisYdNhJFsl2dlv5-97CjbSMD854/edit?usp=sharing
Properties of Objects in the Solar Sy	6.1.3	The inner planets, Mercury, Venus, Earth and Mars h	https://share.nearpod.com/e/57nGagUA5ab	https://docs.google.com/presentation/d/1bvtSwoF2yGsQfH2H4kV69k9eRdftWnltCLzMwesNtZA/edit?usp=sharing

NEARPODS from DAVIS SCHOOL DISTRICT -- Thank you https://www.seedstorylines.org/

Please note: Nearpods are an excellent tool but can't replace a rich classroom learning experience. In science, we want students having hands-on experiences where they collaborate with peers to wonder, sense-make, and problem solve. Be intentional with how you choose to use Nearpod to provide students with a rich science learning experience.

**This document will keep being updated until all episodes are covered. We hope to all episodes created by November 2020.

Kindergarten

K.1.1-K.1.2	E.1	https://share.n	E. 2	https://share.n	E.3	https://share.nearpod.com/e/OIKGryZAlab						
K.1.3-K.1.4	E.1	https://share.n	E. 2	https://share.n	E.3	https://share.n	E.4	https://share.nearpod.com/e/c4VtzJ7Alab				
K.2	E.1	https://share.n	E. 2	https://share.n	E.3	https://share.n	E.4	https://share.n	E.5	https://share.nearpod.com/e/uYEkRpeBlab		
K.3	E.1		E. 2		E.3	https://share.n	E.4					

First Grade

1.1.1 & 1.1.3	E.1	https://share.n	E. 2	https://share.n	E.3	https://share.n	E.4 Pt1	https://share.n	E.4 Pt2	https://share.n	E.4 Pt3	https://share.n	E.5	https://share.nearpod.com/e/M43PXx9ulab
1.1.2	E.1	https://share.n	E. 2	https://share.n	E.3	https://share.nearpod.com/e/wh4ZgWjvlab						
1.2.1	E.1	https://share.nearpod.com/e/cYzi8klvlab										
1.2.2-1.2.3	E.1	https://share.n	E. 2	https://share.n	E.3	https://share.nearpod.com/e/kKONEUtvlab						
1.2.2-1.2.4	E.1	https://share.n	E. 2	https://share.n	E.3	https://share.nearpod.com/e/s9ivfByvlab						
1.3.1	E.1	https://share.n	E. 2	https://share.n	E.3	https://share.nearpod.com/e/b0nOsZ7rL8						
1.3.2-1.3.3	E.1	https://share.n	E. 2	https://share.n	E.3							
1.3.4	E.1		E. 2									

Second Grade

2.1.1	E.1	https://share.n	E. 2	https://share.n	E.3 Pt1	https://share.n	E.3 Pt 2	https://share.n	E. 4	https://share.nearpod.com/e/xYjMSZMvlab		
2.1.2-2.1.3	E.1	https://share.n	E. 2	https://share.n	E.3	https://share.n	E.4	https://share.n	E.5	https://share.nearpod.com/e/hWIDuOTvlab		
2.2.1-2.2.2	E.1	https://share.n	E. 2	https://share.n	E.3	https://share.n	E.4	https://share.n	E.5	https://share.n	E. 6	https://share.nearpod.com/e/BhTVmWawlab
2.2.3	E.1	https://share.n	E. 2	https://share.nearpod.com/e/vXXnBffwlab								
2.2.4	E.1	https://share.n	E. 2	https://share.n	E.3	https://share.nearpod.com/e/dauoQDowlab						
2.3.1-2.3.2	E.1		E. 2		E.3		E.4		E.5			
2.3.3	E.1		E. 2		E.3		E.4		E.5			
2.3.4	E.1		E. 2		E.3		E.4		E.5			

Third Grade

3.1.1-3.1.2	E.1	https://share.n	E. 2	https://share.n	E.3	https://share.n	E.4	https://share.nearpod.com/e/79j98wwwlab				
3.1.3	E.1	https://share.n	E. 2	https://share.nearpod.com/e/oLXGe4ywlab								
3.2.1	E.1	https://share.n	E. 2	https://share.nearpod.com/e/zMqqUUDwlab								
3.2.2	E.1	https://share.n	E. 2	https://share.n	E.3	https://share.nearpod.com/e/QHs0URJwlab						
3.2.3-3.2.4	E.1	https://share.n	E. 2P1	https://share.n	E.2P2	https://share.n	E.3	https://share.n	E.4	https://share.n	E.5	https://share.nearpod.com/e/QyXkBxgxlab
3.2.5-3.2.6	E.1	https://share.n	E. 2	https://share.n	E.3	https://share.n	E.4	https://share.n	E.5	https://share.n	E. 6	https://share.nearpod.com/e/9CJjlhlxlab
3.3.1	E.1	https://share.n	E. 2	https://share.n	E.3	https://share.n	E.4	https://share.n	E.5			
3.3.2-3.3.3	E.1	https://share.n	E. 2	https://share.n	E.3	https://share.nearpod.com/e/kGGUdMEtL8						
3.3.4	E.1	https://share.n	E. 2	https://share.n	E.3	https://share.n	E.4		E.5	https://share.n	E. 6	https://share.nearpod.com/e/i8un3SJtL8
3.3.5	E.1		E. 2									

Fourth Grade

4.1.1	E.1	https://share.n	E. 2	https://share.n	E.3	https://share.n	E.4	https://share.n	E.5	https://share.nearpod.com/e/WcpkpURxlab				
4.1.2	E.1	https://share.n	E. 2	https://share.n	E.3	https://share.n	E.4	https://share.n	E.5	https://share.nearpod.com/e/qnwbPkXxlab				
4.1.3	E.1	https://share.n	E. 2	https://share.n	E.3	https://share.n	E.4	https://share.n	E.5	https://share.nearpod.com/e/7XYNEx6xlab				
4.1.4	E.1	https://share.n	E. 2	https://share.n	E.3	https://share.n	E.4	https://share.n	E.5	https://share.nearpod.com/e/eVIt5mdylab				
4.2.1-4.2.2	E.1	https://share.n	E. 2	https://share.n	E.3	https://share.n	E.4	https://share.n	E.5	https://share.nearpod.com/e/UbBKSOpylab				
4.2.3-4.2.4	E.1	https://share.n	E. 2	https://share.n	E.3	https://share.n	E.4	https://share.n	E.5	https://share.n	E.6	https://share.n	E.7	https://share.nearpod.com/e/3dWrR2Fylab
4.3.1	E.1		E. 2	https://share.n	E.3	https://share.n	E.E							
4.3.2	E.1		E. 2		E.3		E.4							
4.3.3	E.1		E. 2											
4.4.1	E.1		E. 2		E.3		E.4		E.5					
4.4.2	E.1		E. 2		E.3		E.4							

Fifth Grade

5.1.1	E.1	https://share.n	E.2	https://share.n	E.3	https://share.n	E.4	https://share.nearpod.com/e/3rqccm1ylab						
5.1.2	E.1	https://share.n	E.2	https://share.n	E.3	https://share.n	E.4	https://share.nearpod.com/e/pmeBuD6ylab						
5.1.3	E.1	https://share.n	E.2	https://share.n	E.3	https://share.n	E.4	https://share.nearpod.com/e/TTEES8fzlab						
5.1.4	E.1	https://share.n	E.2	https://share.n	E.3	https://share.n	E.4	https://share.nearpod.com/e/BDMewiozlab						
5.1.5	E.1	https://share.n	E.2	https://share.nearpod.com/e/m5YbYUuzlab										
5.2.1	E.1	https://share.n	E.2	https://share.n	E.3	https://share.n	E.4	https://share.nearpod.com/e/eZ8egcAzlab						
5.2.2	E.1	https://share.n	E.2	https://share.n	E.3	https://share.nearpod.com/e/e1jYtsEzlab								
5.2.3-4	E.1	https://share.n	E.2	https://share.n	E.3	https://share.n	E.4	https://share.n	E.5	https://share.nearpod.com/e/gGqv8RLzlab				
5.3.1	E.1		E.2		E.3									
5.3.2	E.1		E.2		E.3									
5.3.3	E.1		E.2		E.3									
5.3.4	E.1		E.2		E.3									

Sixth Grade

6.1.1	E.1	https://share.n	E.2	https://share.n	E.3 Pt1	https://share.n	E.3 Pt2	https://share.n	E.4	https://share.n	E.5	https://share.n	E.6	https://share.nearpod.com/e/040yO78zlab
6.1.1 Cont	E.7	https://share.n	E.8	https://share.n	E.9-10	https://share.nearpod.com/e/YmoLidfAlab								
6.1.2	E.1	https://share.n	E.2	https://share.n	E.3	https://share.n	E.4	https://share.n	E.5	https://share.nearpod.com/e/9Q3Yf6rAlab				
6.1.3	E.1	https://share.n	E.2	https://share.n	E.3	https://share.nearpod.com/e/9YaBE6nAlab								
6.2.1 -6.2.2	E.1	https://share.n	E.2	https://share.n	E.3	https://share.n	E.4	https://share.n	E.5	https://share.n	E.6	https://share.n	E.7	https://share.nearpod.com/e/ZRUivKFAlab
6.2.3-6.2.3	E.1	https://share.n	E.2	https://share.n	E.3	https://share.n	E.4	https://share.nearpod.com/e/1aZq05LAlab						
6.3.1	E.1		E.2		E.3		E.4		E.5					
6.3.2	E.1		E.2		E.3									
6.3.3-6.3.4	E.1		E.2		E.3		E.4		E.5		E.6			
6.4.1	E.1	https://share.n	E.2	https://share.n	E.3	https://share.n	E.4	https://share.nearpod.com/e/jCrgejQuL8						
6.4.2	E.1	https://share.n	E.2	https://share.n	E.3	https://share.n	E.4	https://share.n	E.5	https://share.n	E.6	https://share.n	E.7	https://share.nearpod.com/e/LMqPSp2uL8
6.4.3	E.1	https://share.n	E.2	https://share.n	E.3		E.4							
6.4.4	E.1	https://share.n	E.2	https://share.n	E.3		E.4		E.5					
6.4.5	E.1		E.2											

Welcome to the TEACHER EDUCATION HUB

		Other Links What is available here?
Why Storytelling?	https://www.jneurosci.org/content/29/42/8285	https://www. SEEd Storylines with powerpoints, Lesson plans, teacher notes
	Narrative improves information processing. Glaser, M, Garsoffky B, Schwan S (2009) Narrative-based learning: possible benefits and problems. Communications 34:429–447.	https://sites. Pre-made 3D lesson plans
	Hong HY, Lin-Siegler X (2012) How learning about scientists' struggles influences students' interest and learning in physics. J Educ Psychol 104:469.	https://docs. A series of pre-made NEARPOD lessons
	Narrative increases recall of any scientific material presented in the story. Töpper J, Glaser M, Schwan S (2014) Extending social cue based principles of multimedia learning beyond their immediate effects. Learn Instruction 29:10–20.	https://emed UEN Hub
	"As you hear a story unfold, your brain waves actually start to synchronize with those of the storyteller." Uri Hasson, Professor of Psychology and Neuroscience, Princeton University (via NPR's ShortWave)	
	"…the areas involved in guessing what will happen next are activated…which reinforces the memory." Liz Neeley, former Executive Director of The Story Collider (and marine biologist)	
	Eliciting emotional arousal likely improves the odds that listeners will not only engage with the material, but also act on it as a result. Morris BS, Chrysochou P, Christensen JD, Orquin JL, Barraza J, Zak PJ, Mitkidis P (2019) Stories vs. facts: triggering emotion and action-taking on climate change. Climatic Change 154:19–36.	
	"Stories about how scientists struggled either intellectually or in their personal lives, and then overcame those struggles, have been shown to improve not only the engagement of high school students in science materials, but also boost academic performance." Lin-Siegler et al., 2016	
	"First-person narratives, in particular, can make science personally relevant and encourage personal investment in the topic." (Downs, 2014)	

[1] contact Elicia Grey