



Supports for Remote Learning 6-8

As you are planning remote learning for your students, consider using a format like the following:

1. Start with a phenomenon for students see, listen to, watch, or experience
2. Give students a chance to make sense of what they see with some questions and observations
3. Provide a way for students to record their initial explanation or model
4. Engage students in a **learning experience** in which they are DOing something self-directed (avoid passive video and/or text)
5. Provide a specific text or video to further focus their thinking and help improve their explanation/model
6. To assess, provide a way for students to communicate what they did and learned about the phenomenon

For an example, take a look at this sixth grade lesson: [6.1.1 Appearance of Moon UEN Lesson](#)

To assist you in this work, we are compiling sample **learning experiences** to center your lessons around. Our goal is to expand to each of the standards. As you find useful learning experiences that are self-directed and can be done from a student's home, please share them with your district science team natalie.dutrow@slcschools.org , kristina.kaly@slcschools.org , candace.penrod@slcschools.org !!

Sample Remote Learning Experiences for Science

Strand 6.1 Structure and Motion Within the Solar System			
Standard	Resource	Description	Link
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)	UEN	Students explore why the Moon looks different throughout the month	6.1.1 Appearance of Moon UEN Lesson

Strand 6.2 Energy Affects Matter			
Standard	Resource	Description	Link
6.2.4 Design an object, tool, or process that minimizes or maximizes heat energy transfer. <i>Identify criteria and constraints, develop a prototype for iterative testing, analyze data from testing, and propose modifications for optimizing the design solution.</i> Emphasize demonstrating how the <u>structure</u> of differing materials allows them to <u>function</u> as either conductors or insulators. (PS3.A, PS3.B, ETS1.A, ETS1.B, ETS1.C)	UEN	Students explore ice melting on different surfaces as a way to make sense of insulators and conductors	6.2.4 Insulators and Conductors UEN Lesson
Strand 6.3 Earth's Weather Patterns and Climate			
Standard	Resource	Description	Link
6.3.2 Investigate the interactions between air masses that <u>cause</u> 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)	Teach Engineering: STEM Curriculum/ Weather and Atmosphere	On-line and printable resources for learning about high and low pressure systems and how they affect Earth's weather and climate. Students participate in engineering design by constructing a barometer to gather data.	Lesson: Air Under Pressure with Engineering Design Challenge Teach Engineering: Weather and Atmosphere Unit

Standard 6.3.3 Develop and use a model to show how unequal heating of Earth's <u>systems</u> cause <u>patterns</u> 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)	Climate Kids NASA	Web-based resources with interactive readings and activities for students to engage in climate science. Students can select from a menu of options.	Climate Kids: Weather and Climate
Standard 6.3.4 Construct an explanation supported by evidence for the role of the natural greenhouse effect in Earth's <u>energy</u> 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)	Climate Kids NASA	Web-based resources with interactive readings and activities for students to engage in climate science. Students can select from a menu of options.	Climate Kids: Atmosphere
Strand 6.4 Stability and Change in Ecosystems			
Standard	Resource	Description	Link
6.4.4 Construct an argument supported by evidence that the <u>stability</u> 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)	Natural History Museum of Utah Research Quest	On-line investigations that explore Change in the Uinta Mountains to engage students in Utah phenomena.	Change in the Uinta Mountains: Normal or Not?

Strand 7.1 Forces are Interactions Between Matter			
Standard	Resource	Description	Link
7.1.1 Carry out an investigation which provides evidence that a <u>change</u> in an object's motion is dependent on the mass of the object and the sum of the forces acting on it. <i>Various experimental designs should be evaluated to determine how well the investigation measures an object's motion.</i> Emphasize conceptual understanding of Newton's First and Second Laws. Calculations will only focus on one-dimensional movement; the use of vectors will be introduced in high school. (PS2.A, PS2.C, ETS1.A, ETS1.B, ETS1.C)	PhET Simulation	This tug-of-war simulation explores forces, motion, and friction.	Forces and Motion: Basics - Force Motion Friction
7.1.5 Engage in argument from evidence to support the claim that gravitational interactions within a <u>system</u> are attractive and dependent upon the masses of interacting objects. Examples of evidence for arguments could include mathematical data generated from various simulations. (PS2.B)	PhET Simulation	A Sun, Moon, Earth simulation that explores gravitational force and circular motion.	Gravity And Orbits - Gravitational Force Circular Motion Astronomy
Strand 7.2 Changes to Earth Over Time			
Standard	Resource	Description	Link
7.2.6 Make an argument from evidence for how the geologic time <u>scale</u> shows the age and history of Earth. Emphasize scientific evidence from rock strata, the fossil record, and the principles of relative dating, such as superposition, uniformitarianism and recognizing unconformities. (ESS1.C)	Immersive Virtual Field Trips	Interactive Click and Learn with instructional video and notebooking focusing on Layers and Superposition.	Grand Canyon iVFT

Strand 7.3 Structure and Function of Life			
Standard	Resource	Description	Link
7.3.2 Develop and use a model to describe the <u>function</u> of a cell in living systems and the way parts of cells contribute to cell function. Emphasize the cell as a system, including the interrelating roles of the nucleus, chloroplasts, mitochondria, cell membrane, and cell wall. (LS1.A)	CK-12	An interactive with embedded questions to explore cell structures.	Cell Structure PLIX
Strand 7.4 Reproduction and Inheritance			
Standard	Resource	Description	Link
7.4.1 Develop and use a model to explain the <u>effects</u> that different types of reproduction have on genetic variation, including asexual and sexual reproduction. (LS1.B, LS3.A, LS3.B)	Learn Genetics	A Click and Learn to identify differences between sexual and asexual reproduction.	Sexual/ Asexual Reproduction
Strand 7.5 Changes in Species Over Time			
Standard	Resource	Description	Link
7.5.2 Analyze and interpret data for <u>patterns</u> in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth, under the assumption that natural laws operate today as in the past. (LS4.A, ESS2.E)	Natural History Museum of Utah Research Quest	On-line investigations that explore mysteries of the Cleveland Dinosaur Quarry to engage students in Utah phenomena.	Research Quest - The Mysteries of Cleveland Lloyd Dino Quarry

Strand 8.1 Matter and Energy Interact in the Physical World			
Standard	Resource	Description	Link
8.1.3 Plan and conduct an investigation and then analyze and interpret the data to identify <u>patterns</u> in changes in a substance's properties to determine whether a chemical reaction has occurred. Examples could include changes in properties such as color, density, flammability, odor, solubility, or state. (PS1.A, PS1.B)	Phenomena for NGSS: Virtual Science Education	Students explore at home by Popping Balloons for Science: How to tell if a physical or chemical change occurs	How Can We Tell If We Observed A Chemical Change
Strand 8.2 Energy is Stored and Transferred in Physical Systems			
Standard	Resource	Description	Link
8.2.4 Use computational thinking to describe a simple model for waves that shows the <u>pattern</u> of wave amplitude being related to wave energy. Emphasize describing waves with both quantitative and qualitative thinking. Examples could include using graphs, charts, computer simulations, or physical models to demonstrate amplitude and energy correlation. (PS4.A)	OpenSciEd	This is an entire unit, but has student-facing videos and simulations	8.2 Sound Waves - Unit Overview
8.2.5 Develop and use a model to describe the <u>structure</u> of waves and how they are reflected, absorbed, or transmitted through various materials. Emphasize both light and mechanical waves. Examples could include drawings, simulations, and written descriptions of light waves through a prism; mechanical waves through gas vs. liquids vs. solids; or sound waves through different mediums. (PS4.A, PS4.B)	OpenSciEd	This is an entire unit, but has student-facing videos and simulations	8.2 Sound Waves - Unit Overview
Strand 8.3 Life Systems Store and Transfer Matter and Energy			

Standard	Resource	Description	Link
8.3.2 Develop a model to describe how food is changed through chemical reactions to form new molecules that support growth and/or release energy as <u>matter</u> cycles through an organism. Emphasis is on describing that during cellular respiration molecules are broken apart and rearranged into new molecules, and that this process releases energy. (PS3.D, LS1.C)	OpenSciEd	This is an entire unit, but has student-facing videos and simulations	7.3 Metabolic Reactions - Unit Overview
8.3.3 Ask questions to obtain, evaluate, and communicate information about how <u>changes</u> to an ecosystem affect the <u>stability</u> of cycling <u>matter</u> and the flow of <u>energy</u> among living and nonliving parts of an ecosystem. Emphasize describing the cycling of matter and flow of energy through the carbon cycle. (LS2.B, LS2.C)	Nearpod	A module on how changes in populations affect the Antarctic food web. Created by one of our teachers in the Nearpod District Library.	Stability and Change of the Antarctic Ecosystem
Strand 8.4 Interactions with Natural Systems and Resources			
Standard	Resource	Description	Link
8.4.4 Analyze and interpret data on the factors that <u>change</u> global temperatures and their <u>effects</u> on regional climates. Examples of factors could include agricultural activity, changes in solar radiation, fossil fuel use, and volcanic activity. Examples of data could include graphs of the atmospheric levels of gases, seawater levels, ice cap coverage, human activities, and maps of global and regional temperatures. (ESS3.D)	Concord Consortium	This multi-part module guides students through content, data analysis and experimentation to construct an explanation about the future of Earth's climate.	What is the Future of Earth's Climate?

<p>8.4.5 Analyze and interpret <u>patterns</u> of the occurrence of natural hazards to forecast future catastrophic events, and investigate how data are used to develop technologies to mitigate their effects. Emphasize how some natural hazards, such as volcanic eruptions and severe weather, are preceded by phenomena that allow prediction, but others, such as earthquakes, may occur without warning. (ESS3.B)</p>	<p>UN Office for Disaster Risk Reduction</p>	<p>An interactive game with lots of student choice to build an understanding of risk and risk mitigation in earthquakes, tsunamis, wildfires, hurricanes, and floods.</p>	<p>Stop Disasters!</p>
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