Moving NGSS to Instruction

- What are the **key** words and/or **key** concepts for learning?
- What will students need to **know** or **do** to show mastery?
- What is the **intent** of the performance expectation/learning?

Jennifer Moore

Alisondra Maldonado

PE: 8-LS4-1

Knowledge	Reasoning *AND* Skill/Performance*	Products
• Define fossil record • Understand how sediments form • Describe constructive + deconstructive forces.	* Predict an outcome using fossil evidence. * Use fossil record to support an argument (evolution, Pangea). * Identify a pattern in complexity using fossil record.	

*Does not refer to Performance Expectation

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Dr. Sherri Brown
Sarah Fugate
Brenda Cole
Angela Binkley

PE: 8-ESS1-4

Knowledge	Reasoning *AND* Skill/Performance*	Products
- Know rock strata contains evidence of Earth's history - know geologic time scale organizes Earth's 4.6byo history - know analyses of rock strata is relative not absolute - know fossil record provides relative dating of Earth's history; law of superposition - know major events in Earth's history includes destructive + constructive forces such as mountain chain formation or volcanic eruptions	- explain that major events leaves evidence of Earth's history in rock strata - gather evidence for how geologic time scale is used to organize gts Earth's history - determine relationship btwn fossils + relative age	- construct a scientific explanation using evidence from rock strata to explaining the geologic time scale.

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PE: HS- PS4- 1

Knowledge	Reasoning ***AND*** Skill/Performance*	Products
• Recall basic characteristics of a wave (amplitude, frequency, period, speed, wavelength) • Explain the relationship between wavelength & frequency of a wave • Recognize that medium will affect the speed of a wave	- Represent the relationship between wavelength, frequency, & speed in a mathematical expression (algebraic equation) - Infer/Predict changes in wave speed due to change in medium for the wave	

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PE: 1-ESS1-1

Knowledge	Reasoning *AND* Skill/Performance*	Products
Know sun & stars produce own light Know sun is visible during the day Describe the pattern of the sun as it moves across the sky. Know stars visible only at night Describe how the moon changes (phases) in the night sky. Know the moon rises & moves across the sky & sets	Observe & record the sun's pattern of movement. ~~& reco~~ Predict pattern of movement of sun. Observe & record stars visibility the pattern Predict pattern of stars visibility Observe, record pattern of change of the moon's movement in the Predict pattern of the moons change movement (first hand or media)	(phases) night sky. (phases)

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PE: HS- ESS1-5

Knowledge	Reasoning *AND* Skill/Performance*	Products
• Differentiate between continental and oceanic crust. • Identify ways that scientists date rock. • Recognize credible resources.	• Evaluate maps/data of distances between continents. • Evaluate the accuracy of aging rock. • Use models to demonstrate crustal motion • Evaluate scientific texts to defend/critique an explanation	• Present findings to class.

*Does not refer to Performance Expectation

Moving NGSS to Instruction

Britney Spicer
Sarah Smith
Lynne Tereshko
Sabrina Barnett

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PE: 4-ESS1-1

Knowledge	Reasoning *AND* Skill/Performance*	Products
• Explain the pattern of how sedimentary rocks are formed. • Recognize that fossils are formed in sedimentary rock. • Identify local, regional, and global patterns of rock formations reveal changes over time due to Earth forces. • Explain how Earth's forces (weathering and erosion) changes to Earth's landscape over time. • Recognize that different rock layers represent different times in history.	• Understand the relationship in order to provide evidence the fossils in a layer of rock and the environment that was present at the time. • Use evidence to construct an explanation that supports how rock formations form and change over time.	

*Does not refer to Performance Expectation

*Analyze + interpret data
*provide evidence

06-ESS2-3

Learning Targets

06-ESS2-3

Sue Styles
Maria Russ

Knowledge	Reasoning/Skill	Product
• identify + describe rock types • understand the theory of plate tectonics/continental drift • identify and describe fossil types ? cast mold actual trace • describe shapes of continents plot • identify describe ocean floor structures and how they are affected by plate movement • identify and describe Earth's layers	• analyze data that supports Continental Drift Theory/Plate tectonics • interpret data about Plate tectonics/Drift Theory • use data analysis + provide evidence to predict future continent changes	* graph? • model of future Earth • write an explanation of how it supports your model → (patterns)
	* Compare continental shapes to infer previous location change * can analyze data to provide sufficient data to support the theory of continental drift	* pattern in distribution of fossils/rock types

Utah website - teach.genetics.utah.edu/content/begin/traits/ReproductiveStrategies

Moving NGSS to Instruction

- What are the **key** words and/or **key** concepts for learning? animal behaviors, plant structures, reproduction
- What will students need to **know** or **do** to show mastery? Use argument to support an explanation based on evidence
- What is the **intent** of the performance expectation/learning? Understand how plants and animals successfully reproduce

PE: 07-LS1-4

Teaching Targets

Knowledge	Reasoning *AND* Skill/Performance*	Products
Sexual + asexual rep. how genetic material is passed traits - learned + inherited animal behaviors that allow for successful rep. plants have specialized features to allow for rep. interdependent relationship b/t plants + animals to allow for rep. Ecosystem's Abiotic factors can help contribute to rep. + growth	Defend certain behaviors as a way of successful reproduction Make inference about genetic traits of plants + animals that help reproduction Identify interdependent relationships Construct an argument based on evidence	Names: Sara Taylor Katie Stephens Jessica Elliott Lyndsey Hite Steve Metcalfe

*Does not refer to Performance Expectation

Learning targets: ① I will identify interdependent relationships between plants and animals that are <u>MOST</u> successful.

Moving NGSS to Instruction

Grade 2

Mandy Peters
Gail Becraft
Martha Voll

- What are the **key** words and/or **key** concepts for learning?
- What will students need to **know** or **do** to show mastery?
- What is the **intent** of the performance expectation/learning?

PE: 2-ESS1-1

Knowledge	Reasoning *AND* Skill/Performance*	Products
Know that there are events that can change the Earth Know that there are fast changes Know that there are slow changes Know What is evidence identify changes to the Earth's surface	Explain the differences that a fast or slow change has on the Earth's surface. Identify that a change has occured on the Earth's surface Recognize appropriate evidence from multiple sources	

*Does not refer to Performance Expectation

Moving NGSS to Instruction

Carla Wilson

- What are the **key** words and/or **key** concepts for learning?
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PE: HS-PS1-4 Develop a model to illustrate the release or absorption of energy from a chemical reaction system depends upon the changes in total bonds.

Knowledge	Reasoning *AND* Skill/Performance*	Products
Know how to Read & write chemical reactions (symbols used). Know how to Balance Chemical reactions - Recognize how chemical reactions are a type of model to represent what happens during chemical reaction in terms of bonds, energy & mathematical relationships. - Know the relationship between bonds breaking/forming and energy transformations. - Recognize that chemical reactions are systems that affect energy changes. - Recognize two important laws the law of conservation of matter & the law of conservation of energy. - Know the difference between endothermic & exothermic reactions	- Be able to read, write & balance chemical reactions - Make sense of the information given or that can be derived from a chemical reaction. - Be able to perform mathematical calculations to show how energy & mass is conserved during a chemical reaction. - Be able to create molecular models (drawings) to explain how energy is conserved during a chemical reaction. - Be able to critique, revise & modify your model. -	- Create Models to represent energy transfer during chemical reactions.

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Christy Taylor
Carmarita Webb
Stefanie Kleinholter
Anna Kristin Lewis
Maria Jones

PE:

Knowledge	Reasoning *AND* Skill/Performance*	Products
*Describe a fossil as evidence as types of organisms that lived long ago. *Understand different types of fossils and environments. *Recognize that data is collected evidence *Know that fossils can be classified by size, type, & distribution	~~*Provide evidence to explain~~ *Provide evidence about the type of organisms that lived long ago & also about the nature of their environment. *Student can infer time periods based on fossil classifications	

*Does not refer to Performance Expectation

K-ESS2-1 Use and share observations of local weather conditions to describe patterns over time.

Learning Targets

Knowledge	Reasoning/Skill	Product
Recognize patterns as recurring events Recognize that scientists look for patterns and order when making observations about the world. Use collected data as evidence to describe a pattern. Identify the elements of weather (sunlight, wind, snow and rain, and temperature) Use different strategies to record daily weather.	Observe, identify, and record daily weather. Analyze collected weather data to discern patterns over time. Share evidence from observations to describe local weather patterns.	

Ann Casebier
Amy Grimm

HS-LS2-1

Learning Targets

Mary L. Martin
Chris Ryan James Crockett
Allison Moehlman Evelyn Mayer

Knowledge	Reasoning/Skill	Product
~~Utilize and/or~~ - Understand the concept of carrying capacity. - Understand the affects of intra/inter competition - Recognize the difference between logistic + exponential growth. - Understand how the availability of resources affects population sizes. - Recognize the difference between density-Independent and density-Dependent factors and how they will affect population size.	- Create a graph from a data set. - Analyze and infer trends from a data set/graph. - Infer cause + effect relationships between populations and their environments.	

* We are not clear what "different scales" really means.

Learning Targets

Knowledge	Reasoning/Skill	Product
- ~~Identifies~~ Identify a simple food chain - Identify a producer in a food chain - Recognize that energy flows through a food chain - Identify a decomposer and their role in a food chain. - ~~Identify a~~ Know what the difference between ~~[illegible]~~ aimals based on what they eat.	- Predict/Infer how increases and decreases in food effect ~~[illegible]~~ animals in that ecosystem.	