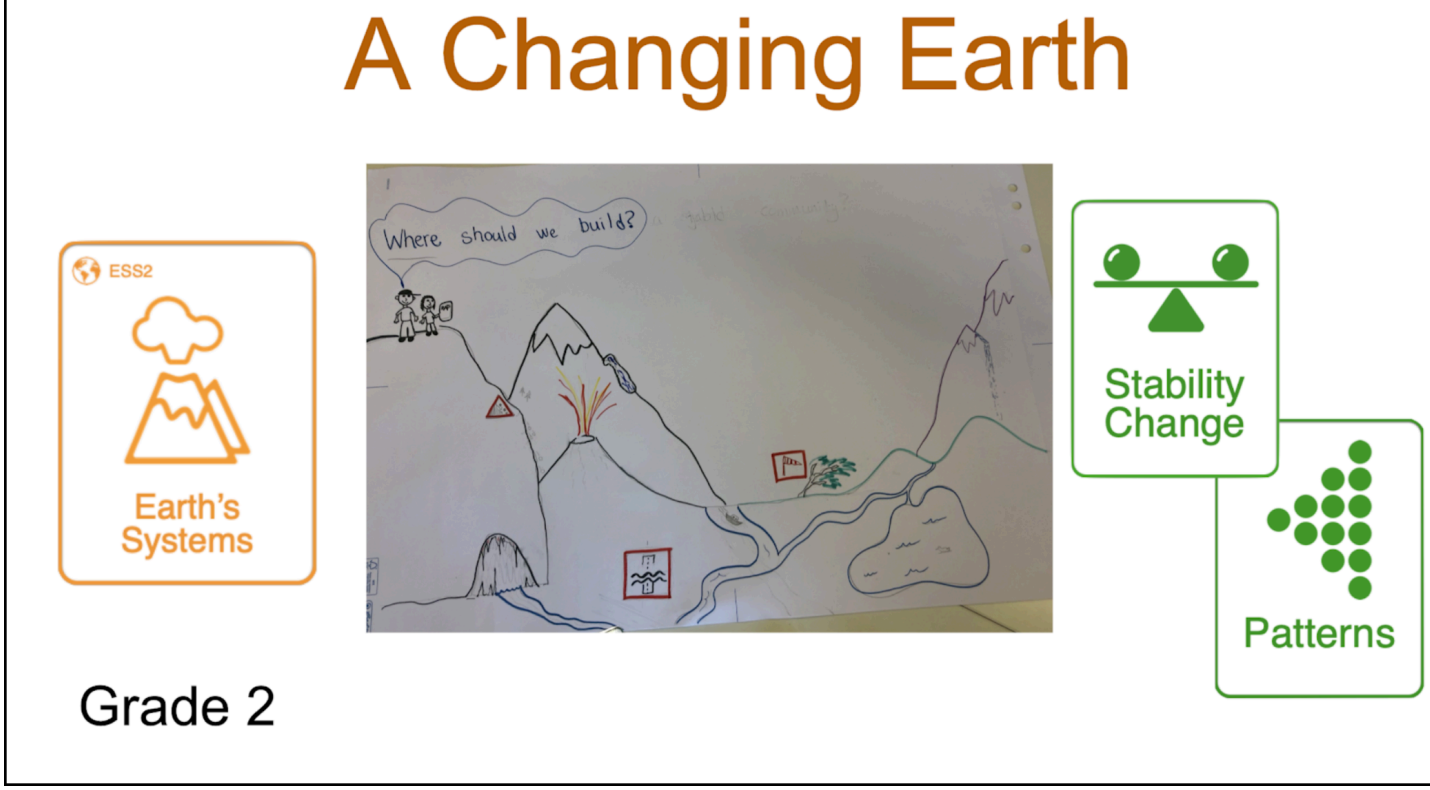
Storyline Unit Design

Understanding by Design (UbD) Template*

Unit		Course(s)	
Designed by		Time Frame	

Anchor Model



*UbD Unit Planner is from Wiggins, Grant and McTighe, Jay. Understanding by Design Guide to Creating High-Quality Units. Alexandria, VA: Association for Supervision and Curriculum Development. 2011.

Stage 1: Desired Results

Performance Expectations:

2-ESS1-1: Earth Events - Slow and Quick
Use information from several sources to provide evidence that earth events can occur quickly or slowly. (Stability and Change)

2-ESS2-1: Erosion Design Solution
Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land. (Stability and Change)

2-ESS2-2: Mapping Land and Water
Develop a model to represent the shapes and kinds of land and bodies of water in an area. (Patterns)

2-ESS2-3: Water on Earth
Obtain information to identify where water is found on Earth and that it can be solid or liquid. (Patterns)

Anchoring Phenomenon

Anchoring Phenomenon Worksheet

Enduring Understandings	Essential Questions

Stage 2: Assessments

2-ESS1-1 - The Quick and the Slow
2-ESS2-1 - Testing Soil Solution
2-ESS2-2 - Mapping Fairlop Waters
2-ESS2-3 - Touring Iceland's Waters

Assessment Screening Tools

Backward Design Elements

What new skills (practices) will students need to learn?	What thinking concepts will students need to learn?	What science concepts will students need to learn?
Draw a model - map with labels and key (components)	Patterns in the natural world of land and water	Bodies of water Types of land Human Structures

Stage 3: Learning Plan			
Phenomenon or Problem	Learning Performance - What will they do? The three dimensions woven together into a single learning performance.	Why is this important? How does this activity help build understanding of the anchoring phenomenon.	Learning Experience - How will they do it? Graphic organizers, protocols, scaffolds, labs, mini-lesson, student discourse, etc.
Portlock or Pearl Harbor or China Man's Hat	Students will ask questions about patterns in land and water.	Starting with local is place based and connecting to where students are. Culturally relevant.	Show drone overview footage. Spread out photos. Categorize photos into types of land and water Mini lesson on patterns
Formative Assessment - What information are you collecting to know that they met the target?		Collect student question on wonderwall	
Portlock or Pearl Harbor or China Man's Hat	Students will develop a model (map) that shows the structure of land and water.		
Formative Assessment - What information are you collecting to know that they met the target?			
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Summative Assessment What information are you collecting to know that they met the target?			

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Summative Assessment What information are you collecting to know that they met the target?			

Materials / Resources

Vocabulary

2-ESS1-1
Earth events
- Quick (e.g. flood, storm, volcano, earthquake, landslide)
- Slow (e.g. weathering and erosion of rock)

Weathering
Erosion
Stability and Change

2-ESS2-1
Land (e.g. hill, park, valley, mountain)
Weathering
Wind erosion
Water erosion
Stability and Change

2-ESS2-2
Map
Land (e.g. hill, mountain, park, valley)
Body of water (e.g., creek, ocean, lake, river)
Patterns

2-ESS2-3
Water
Solid water (e.g. ice, glaciers, snow)
Liquid water (e.g. oceans, rivers, lakes, groundwater)
Patterns

Mini Lessons

Patterns Level 1 - Observational Patterns Mini-Lesson
Patterns Level 1- Observational Patterns Thinking Slides
Stability and Change Level 1 - Stability and Change
Stability and Change Level 1 - Stability and Change Thinking Slides

Graphic Organizers

2-ESS1-1 - Earth Events Quick or Slow Graphic Organizer (Student Version)
2-ESS1-1 - Earth Events Quick or Slow Graphic Organizer (Teacher Version)
2-ESS2-1 - Changing Land Shapes Graphic Organizer (Student Version)
2-ESS2-1 - Changing Land Shapes Graphic Organizer (Teacher Version)
2-ESS2-2 - Patterns of Land and Water Graphic Organizer (Student Version)
2-ESS2-2 - Patterns of Land and Water Graphic Organizer (Teacher Version)
2-ESS2-3 - Patterns of Water on the Earth Graphic Organizer (Student Version)
2-ESS2-3 - Patterns of Water on the Earth Graphic Organizer (Teacher Version)
Phenomena Observation Graphic Organizer
Questioning Graphic Organizer
Modeling Graphic Organizer
Planning an Investigation Organizer
Investigation Evidence Organizer
Engaging in Argumentation Organizer

Differentiation / Modifications

Phenomenon Worksheet

Back to **Stage 1**

◁ **2-ESS1-1 - fast and slow**
◁ **2-ESS2-1 - erosion prevention**
◁ **2-ESS2-2 - maps of land and water**
◁ **2-ESS2-3 - solid and liquid water**
◁ **Local**
◁ **Favorite**
◁

Grand Canyon ◁◁◁◁
Landforms (Volcanoes, valleys, arches, floodplains) ◁◁◁
Rivers ◁◁
Glaciers (e.g. Glacier National Park) ◁◁◁
Quake Lake ◁◁◁◁◁◁
Local Landslide Dam ◁◁◁◁◁◁
Lake Attabad - Pakistan ◁◁◁◁◁◁
Old Faithful is not faithful any more ◁◁◁
Events - earthquakes ◁
Erosion ◁
Islands ◁◁
Maps different types of landforms◁◁
Broken rocks ◁
Lewis and Clark Caves◁
Mudslides ◁
Flash Floods ◁
Sand storms
Snow ◁
Avalanche ◁◁◁
Switchbacks on trails ◁◁◁
Dams ◁◁
Erosion prevention ◁
Different shaped rivers ◁◁
Floodplains
Deltas ◁
Sinkholes ◁
Glaciers disappearing◁
Waterfalls ◁◁
Clean water (filtering) ◁◁
Minecraft new update on Caves◁
Ponds ◁◁
Frozen lakes in the winter◁
Revegetation ◁
Hanging walls
Sandbags ◁◁
Retaining walls ◁◁
Oceans vs seas vs lakes ◁

2-ESS1-1: Earth Events - Quick and Slow

Evidence Statement

Assessment: The Quick and the Slow (PDF) (Google Template)

The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions. • Make observations from several sources to construct an evidence-based account for natural phenomena.	**ESS1.C: The History of Planet Earth** • Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe.	**Stability and Change** • Things may change slowly or rapidly.

Reflections: *Type Here*

	No	Partial	Yes
1. The assessment contains a **phenomenon** (science) or a **problem** (engineering)			
2. The **prompts** match the Science and Engineering Practice (SEP) and engage students in sense making.			
3. The **stimuli** have multiple and sufficient information needed to utilize the SEP. (e.g. multiple data sets to analyze)			
4. The **prompts** elicit observable understanding of the Disciplinary Core Idea (DCI).			
5. The **prompts** explicitly mention the Crosscutting Concept (CCC).			
6. The **prompts** include language (i.e. bullets) from grade appropriate progressions. (SEP)(DCI)(CCC)			
7. The **phenomenon** or **problem** is novel to show the transfer of knowledge. (i.e. not in the unit)			

Screening Tools

Back to Stage 2

2-ESS2-1: Erosion Design Solution

Evidence Statement

Assessment: Testing Soil Solutions (PDF) (Google Template)

The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

Science and Engineering Practices

Constructing Explanations and Designing Solutions

Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.

- Compare multiple solutions to a problem.

Disciplinary Core Ideas

ESS2.A: Earth Materials and Systems

- Wind and water can change the shape of the land.

ETS1.C: Optimizing the Design Solution

- Because there is always more than one possible solution to a problem, it is useful to compare and test designs. *(secondary)*

Crosscutting Concepts

Stability and Change

- Things may change slowly or rapidly.

Connections to Engineering, Technology, and Applications of Science

Influence of Engineering, Technology, and Science on Society and the Natural World

- Developing and using technology has impacts on the natural world.

Connections to Nature of Science

Science Addresses Questions About the Natural and Material World

- Scientists study the natural and material world.

Reflections: *Type Here*

	No	Partial	Yes
1. The assessment contains a **phenomenon** (science) or a **problem** (engineering)			
2. The **prompts** match the Science and Engineering Practice (SEP) and engage students in sense making.			
3. The **stimuli** have multiple and sufficient information needed to utilize the SEP. (e.g. multiple data sets to analyze)			
4. The **prompts** elicit observable understanding of the Disciplinary Core Idea (DCI).			
5. The **prompts** explicitly mention the Crosscutting Concept (CCC).			
6. The **prompts** include language (i.e. bullets) from grade appropriate progressions. (SEP)(DCI)(CCC)			
7. The **phenomenon** or **problem** is novel to show the transfer of knowledge. (i.e. not in the unit)			

Screening Tools

Back to Stage 2

2-ESS2-2: Mapping Land and Water

Evidence Statement

Assessment: Mapping Fairlop Waters (PDF) (Google Template)

The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
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, or storyboard) that represent concrete events or design solutions. • Develop a model to represent patterns in the natural world.	**ESS2.B: Plate Tectonics and Large-Scale System Interactions** • Maps show where things are located. One can map the shapes and kinds of land and water in any area.	**Patterns** • Patterns in the natural world can be observed.

Reflections: *The video was engaging, may be better if it was something tied to Hawaii. Thumbnails helped to draw map. Maybe a real estate listing to support drone*

	No	Partial	Yes
1. The assessment contains a **phenomenon** (science) or a **problem** (engineering)			**X**
2. The **prompts** match the Science and Engineering Practice (SEP) and engage students in sense making.			**X**
3. The **stimuli** have multiple and sufficient information needed to utilize the SEP. (e.g. multiple data sets to analyze)			**X**
4. The **prompts** elicit observable understanding of the Disciplinary Core Idea (DCI). *Criteria of what needs to be listed, provide a word bank for labeling (maybe include things on the map such as ocean)		**X**	
5. The **prompts** explicitly mention the Crosscutting Concept (CCC).			**X**
6. The **prompts** include language (i.e. bullets) from grade appropriate progressions. (SEP)(DCI)(CCC)			**X**
7. The **phenomenon** or **problem** is novel to show the transfer of knowledge. (i.e. not in the unit)			**X**

Screening Tools

Back to Stage 2

2-ESS2-3: Water on Earth

Evidence Statement

Assessment: Touring Iceland's Water (PDF) (Google Template)

The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

Science and Engineering Practices

Obtaining, Evaluating, and Communicating Information

Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information.

- Obtain information using various texts, text features (e.g., headings, tables of contents, glossaries, electronic menus, icons), and other media that will be useful in answering a scientific question.

Disciplinary Core Ideas

ESS2.C: The Roles of Water in Earth's Surface Processes

- Water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice and in liquid form.

Crosscutting Concepts

Patterns

- Patterns in the natural world can be observed.

Reflections: *Type Here*

	No	Partial	Yes
1. The assessment contains a **phenomenon** (science) or a **problem** (engineering)			
2. The **prompts** match the Science and Engineering Practice (SEP) and engage students in sense making.			
3. The **stimuli** have multiple and sufficient information needed to utilize the SEP. (e.g. multiple data sets to analyze)			
4. The **prompts** elicit observable understanding of the Disciplinary Core Idea (DCI).			
5. The **prompts** explicitly mention the Crosscutting Concept (CCC).			
6. The **prompts** include language (i.e. bullets) from grade appropriate progressions. (SEP)(DCI)(CCC)			
7. The **phenomenon** or **problem** is novel to show the transfer of knowledge. (i.e. not in the unit)			