### Planning the inquiry

#### 1. What is our purpose?

1a) To inquire into the following:
- **transdisciplinary theme**
  - *How the world works:*
    - An inquiry into the natural world and its laws; the interaction between the natural world (physical and biological) and human societies; how humans use their understanding of scientific-principles; the impact of scientific and technological advances on society and on the environment.

- **central idea**
  - Human actions and natural occurrences affect cycles and systems in nature.

1b) **Summative assessment task(s):**

What are the possible ways of assessing students’ understanding of the central idea? What evidence, including student-initiated actions, will we look for?

Your task is to choose an ecosystem of the world and describe and analyze its systems and cycles. Then predict how a natural disaster or human action would impact the ecosystem. Create an action plan to resolve the problem. You may work individually or with a partner.

Choose one of the following ecosystems for your project:

1. Rainforest
2. Desert
3. Grasslands
4. Ocean
5. Tundra
6. Taiga

Research must include information on the following in the form of a portfolio:

- a. Climate and landforms
- b. Water cycle (ie. What is the water source/accumulation?)
- c. Life cycles- must include one example of an animal that goes through complete and one incomplete metamorphosis.

### 2. What do we want to learn?

What are the key concepts (form, function, causation, change, connection, perspective, responsibility, reflection) to be emphasized within this inquiry?

Key Concepts: function, change, reflection

Related Concepts: supply, demand, cycles

What lines of inquiry will define the scope of the inquiry into the central idea?

- Impacts of human actions on nature
- Cycles in nature
- The Earth’s ecosystems

What teacher questions/provocations will drive these inquiries?

**How do humans impact nature?**

*What are the naturally occurring cycles and how are they essential to survival? (water, carbon dioxide)*

*What happens when cycles are disrupted?* (missing links in food chains, acid rain, flooding)

What are the characteristics of ecosystems?

Provocations

**How do human actions affect nature?**

Video (invasive species)
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<td>d.</td>
<td>3 examples of food chains.</td>
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<td>e.</td>
<td>An example of a plant and its physical adaptation</td>
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<td>f.</td>
<td>An example of an animal and its physical adaptation</td>
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<td>g.</td>
<td>Carbon dioxide and oxygen cycles</td>
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<td>h.</td>
<td>Which natural disasters and human actions occur in that area</td>
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Action plans can be presented as:

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A rubric will be used to assess student work.

Why should Galveston and New Orleans not exist?

Planning the inquiry
3. How might we know what we have learned?

*This column should be used in conjunction with “How best might we learn?”*

What are the possible ways of assessing students' prior knowledge and skills? What evidence will we look for?

StemScopes Pre-Assessment – ecosystem, adaptations, water cycle, carbon dioxide/oxygen cycles (5 questions assessment)

What are the possible ways of assessing student learning in the context of the lines of inquiry? What evidence will we look for?

Students will create a water cycle illustrations. Vocabulary that must be included: evaporation, precipitation, condensation, run off, transpiration and accumulation.

Students will develop an animal and plant that can survive in their chosen ecosystem.

Students will research a scenario which involves humans affecting nature. Students will create a short presentation that includes a visual model.

4. How best might we learn?

What are the learning experiences suggested by the teacher and/or students to encourage the students to engage with the inquiries and address the driving questions?

- Where’s Safe-T
- Needs of organisms in an environment class poster
- Students will create model of environments based on the needs of an assigned animal. Students will label the living and nonliving things that are a part of the environments.
- Food web creation activity
- Food web hunt
- Before and After poster
- Content Connections video follow along
- Students simulate and predict the effects of changes to an organism’s environment.
- Poster of gas exchange in chosen ecosystem
- Interactive Investigation
- Alien Planet Animal
- Inherited traits bingo
- Inherited vs Learned station rotation
- Making an offspring activity
- Observation and drawing of the metamorphosis of grasshoppers, beetles, butterflies, frogs, etc.
- Food Chain Card sort

What opportunities will occur for transdisciplinary skills development and for the development of the attributes of the learner profile?

**Transdisciplinary Skills**

Research Skills- planning a course of action to create an alien animal to survive in a new environment, collecting data to develop an outline, presenting research findings to class

Thinking Skills- Synthesis of data to develop an animal that lives in an new environment.

Self-Management Skills- Time management to play and carry out animal creation

**Attributes of the Learner Profile**

Caring- developing concern for the actions of others and ourselves
5. What resources need to be gathered?
What people, places, audio-visual materials, related literature, music, art, computer software, etc, will be available?

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Tuck Everlasting (focus on the life cycle) by Natalie Babbitt, Technology: Food Web Smartboard, Inherited Traits Smartboard, Adaptations Smartboard, Brainpop Video on adaptations, inherited traits and learned behaviors, United Streaming on invasive species, Computer Lab teacher will assist with research on ecosystems

**POWERPOINTS: HUMAN VS PHYSICAL GEOGRAPHY—**


How will the classroom environment, local environment, and/or the community be used to facilitate the inquiry?

Butterfly Garden on our campus, Classroom Terrarium (spotted gecko and hamster habitats), metamorphosis live observation (Milkweed bugs, crickets, and meal worms)

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Reflecting on the inquiry
6. To what extent did we achieve our purpose?

Assess the outcome of the inquiry by providing evidence of students' understanding of the central idea. The reflections of all teachers involved in the planning and teaching of the inquiry should be included.

We did not complete the summative assessment in whole. As we progressed through the planner, we realized our activities for our planner were the same as our summative assessment just broken into smaller pieces. However, at the time we were going through the activities we did not realize the students would be recreating them in their summative assessment. The students did complete most elements of the summative assessment, however, they were not interconnected as we had envisioned.

For next year, we will assign the summative assessment including the ecosystem so the students can have an ongoing assignment that builds as we progress through the planner. We feel it is important that in the future the smaller projects are all developed around a central ecosystems to reinforce the central idea.

What was the evidence that connections were made between the central idea and the transdisciplinary theme?

The students understood the larger idea of the natural world. They also developed an understanding of how human actions can positively and negatively impact the natural world. Our students developed action ideas that they could be accomplished within our community. This discussion reinforced their understanding of physical and biological interactions in the natural world.

7. To what extent did we include the elements of the PYP?

What were the learning experiences that enabled students to:
- develop an understanding of the concepts identified in “What do we want to learn?”
  Students, as a class, develop a list of needs of organisms in a specific environment class poster.
  Students simulate and predict the effects of changes to an organism's environment.
- demonstrate the learning and application of particular transdisciplinary skills?
  Students created model of environments based on the needs of an assigned animal.
  Students will label the living and nonliving things that are a part of the environments.
  This developed understanding of the interactions that occur within the natural world.
- develop particular attributes of the learner profile and/or attitudes?
  Caring- Students developed understanding of the need to care about the natural world at micro level. The need for smaller changes can and will positively impact the larger natural world.
  Reflective- Students were able to look back at how human interactions with the natural world have affected the cycles in nature. They were also able to develop actions that can positively change the natural world.

In each case, explain your selection.
### Reflecting on the inquiry

8. **What student-initiated inquiries arose from the learning?**

Record a range of student-initiated inquiries and student questions and highlight any that were incorporated into the teaching and learning.

**Before and after poster of human impacts on environmental systems**

**What can we do to change the after portion?**

**Alien planet animal** - Create an animal that has adaptations to survive in a given environment.

Record student-initiated actions taken by individuals or groups showing their ability to reflect, to choose and to act.

Students brainstormed actions they could achieve within their households and community. They understood that small actions can make an impact on the larger natural world.

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9. **Teacher notes**

We need to stay on a timeline.

We as a group need to be all doing the same summative assessment. Students need to have the summative assessment the first week we start the planner. Students will complete mini-projects throughout the unit to present in a culminating presentation.