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 influence cycles and systems.	Class/grade: 5th Age group:10-11 year, Age group:10-11 years School: Poe Elementary School code: 49497 Title: How the World Works Teacher's): Baber, Crump, Rankin, Salinas, Stout, Truax Date: March 1- April 16, 2021 Proposed duration: 6 weeks

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?

Students will write a reflection about how human actions and natural occurrences affect cycles and systems. They may choose whatever subject they want as long as they give evidence to back up their thinking.

As a result of this unit students may suggest the following actions:

-plant trees

-collect money for recent disasters around the world

-talk to their family about using less water/electricity in their household

-using public transportation or walking/biking

-using less plastic water bottles and more reusable ones

-writing a persuasive letter to school administration to put water bottle dispensers

-following the rules in school to help the system

2. What do we want to learn?

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

Key Concepts: function, change, causation

Related Concepts: estimation, problem solving, cycles, ecosystems, writing process

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

- Impacts of human actions/natural disasters
- Cycles
- Systems

What teacher questions/provocations will drive these inquiries?

How do humans impact nature?
How does nature impact the world? (adaptations
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, ABC order, Writing process)
What is the importance of a system?
What are the characteristics of ecosystems?

Provocations

Some groups will be forces to adapt to their environment. (fan)
Some groups will be given more/less supplies.
Groups will be given instructions in English one group will be given instructions in a different language.

3. How might we know what we have learned?	4. How best might we learn?
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? Ask the students what they know about the central idea. Record their responses on a chart paper to display for the duration of the inquiry. . What are the possible ways of assessing student learning in the context of the lines of inquiry? What evidence will we look for? When given a human action or natural disaster scenario, students will explain how it will affect the ecosystem. Impacts of human actions/natural disasters on nature Assessment: Students will research a natural disaster of their choosing and create a presentation Evidence: Students understand that natural disasters may influence nature's balance and ecosystems Cycles Assessment: Students will dissect an owl pellet to determine its prey. They will complete a food web using the information from the dissection Evidence: Students will understand that natural cycles take place all around us Systems Assessment: Students will solve problems using plot diagrams. Students will create an organism and its ecosystem Evidence: Students will understand how an organism's structures and functions may change because of human interactions	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? Students will develop an animal and plant that can survive in their chosen ecosystem. Students will create a 3D model of the animal or plant in the ecosystem. Teacher will use a rubric to assess their understanding of the task. Students will get into their ecosystem groups and research the different types of natural disasters that happen in that area. Students will then create a picture of their ecosystems after the natural disaster has occurred. Students will present their projects as a group explaining how the natural disaster has affected their ecosystem. Students will research a scenario which involves humans affecting nature. Students will create a short presentation that includes a visual model. Teacher will use a rubric to assess their understanding of the task. ● 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 as a result of a human action ● 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 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.

d. 3 examples of food chains.

e. An example of a plant and its physical adaptation

f. An example of an animal and its physical adaptation

g. Carbon dioxide and oxygen cycles

h. Which natural disasters and human actions occur in that area.

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 the animal creation

Attitudes

Curiosity- Students will be curious about how one human action or natural disaster can cause so many changes in an ecosystem.

	Appreciation- Students appreciate the resources that they have and **empathize** with those that don't. **Integrity**- Student will use integrity when using and making decisions. Student will make suggestions to others on how to use integrity in their decision making skills **Attributes of the Learner Profile** Caring- developing concern for the actions of others and ourselves Reflective- analyzing human actions and the impact it has on the natural world Knowledgeable- gain knowledge on interactions within ecosystems, adaptations, and cycles in nature

5. What resources need to be gathered?

Video (invasive species)
Invasive Species: http://video.pbs.org/video/1098841639/
Invasive Species(sea lampreys) https://www.youtube.com/watch?v=9JQ6oHjpeqU
Invasive Species (asian carp) https://www.youtube.com/watch?v=rPeg1tbBt0A
Invasive Species (zebra mussels) https://www.youtube.com/watch?v=abImqGDzXBo
Wolf Reintroduce: http://www.bbc.com/future/story/20140128-how-wolves-saved-a-famous-park
MyOn

What people, places, audio-visual materials, related literature, music, art, computer software, etc, will be available?
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—

Resources: http://mrsdell.org/maps.html, http://www.slideshare.net/tonybattista/physical-or-human-geography-presentation, http://www.slideshare.net/Podders/human-physical-geography?related=3, http://www.slideshare.net/hiratufail/what-is-geography-451464?related=1, http://www.slideshare.net/kapil_g/modification-of-environment-by-human-beings-and-consequences-of-human-activities?qid=8c82a0f9-452f-442e-9828-a4f04e3e792d&v=default&b=&from_search=1, http://www.slideshare.net/lbonner1987/chapter-1-housing-and-human-needs?qid=6a2d06fd-c91c-4015-b083-475a77e20dd6&v=default&b=&from_search=1

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)

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.

Based on our students' summative assessment we saw that they did have a deep understanding of the central idea. Students were able to connect cycles and systems in nature to specific biomes around the world. It was evident that students understood that if one cycle is affected it, in turn, affects many others.They were able to reflect on how natural occurrences and human actions affected their chosen biome. However, students did struggle with how they might take action. We as teachers need to build into our lesson plans more opportunities for students to be called to action.

How could you improve on the assessment task(s) so that you would have a more accurate picture of each student's understanding of the central idea?

Next year we will allow students to create a rubric for the summative assessment to give students the requirements for the project. Students struggled to give us enough information to show they understood the central idea. We feel a rubric will guide them in the right direction to show what they know.

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

Student prompted/driven classroom discussion about how humans impact the natural world. We saw that they were very concerned about the extent of their impacts on the world. Students had a deep understanding that the world works in interdependent ways: we depend on our environment for survival and our environment currently depends on our responsible choices..

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?"

  Groups created a picture or model of their ecosystem including the biotic and abiotic things found in the ecosystem.

  Students developed fictional animals within their chosen ecosystem that had to have both physical and behavioral adaptations to help them survive in the given ecosystem.

  Students were involved in creating a human food web. Students were given different producers, consumers, and decomposers and needed to create the web with string.

  Students did a lab where each of them were given a "tool" that a looted to different beak types of birds. Students were then asked to pick up different material in a certain amount of time. Students realized that some of the tools were better than others when picking up materials.

  Students create a food web that would be found in their chosen ecosystem. After they created their food web they were to reflect on how the food web would change when an animal was added or taken out.

  Our key concepts for this planner are form, function, and change. Through the several units they studied, they learn about how the natural world changes through established cycles, natural disasters/occurrences, and human actions. They also learned the forms and functions of the specific cycles in nature.

  On top of these key concepts, our students also made connections with causation of natural and human effects on nature and their responsibility to take care of the planet and natural cycles.

  Our related concepts for this planner are estimation, problem solving, and cycles. We taught both estimation in math and making inferences/ estimations for causes and effects in nature. We taught problem solving skills in math as well as solving problems that present themselves in the natural world - mainly the problems that deal with cycles in Earth Sciences. In ELA we read a class novel called Tuck Everlasting. We focused on the cycle in the story and what happens when the cycle is broken. Also in ELA we taught inferences and foreshadowing. Students needed to identify events in the story that give you an idea about what is to come later in the novel.

- demonstrate the learning and application of particular transdisciplinary skills?

  Thinking skills- Students were involved in critical thinking when they reflected on how they have a direct impact on different environments
  -Students had to do creative thinking to not only conceive their animal but also build, produce and present their animal using household items.
  Research skills
  -Students were able to research necessary living and nonliving items necessary

for survival. Students were able to process biotic and abiotic elements to create their models.
-Students researched producers, consumers and decomposers found in their ecosystem to create their food web.
-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? In each case, explain your selection.

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. Students cared about their individual impact on the greater environment.

Reflective- Students were able to look back at how human interactions with the natural world have affected the cycles in nature.

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.

- How did these animals get to this ecosystem?
- What can I do to help? How can go beyond the everyday choices to help protect the natural world?
- How/Why do natural disasters form?
- What is already being done to protect ecosystems?

At this point teachers should go back to box 2 “What do we want to learn?” and highlight the teacher questions/provocations that were most effective in driving the inquiries.

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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.

9. Teacher notes

Add in migration of people

Adaptations characters make throughout a story.