1. What is our purpose?

1a) To inquire into the following:

- **transdisciplinary theme**

Who We Are
An inquiry into the nature of the self; **beliefs and values**; personal, physical, mental, social and spiritual health; human relationships including families, friends, communities, and cultures; rights and responsibilities; what it means to be human.

- **central idea**

Our beliefs and behaviors have a direct correlation with our knowledge and understanding of the physical world.

Class/grade: 5th Age group: 10-11

School: Poe ES School code: 922932

Title: Who We Are

Teacher(s): Mayces, Stout, Baber, Hubbard, Williams

Date: February 15- April 1

Proposed duration: 50 number of hours over 6 number of 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 choose a scientific discovery and explain its impact on the beliefs and behaviors of humankind.

Students will include the following:

- An explanation of the scientific discovery
- A before/after description of the discovery's impact on:
  - human behavior
  - belief systems
  - social systems
  - governments
  - economic practices and/or philosophies
- An opinion piece on whether the student feels the discovery made a positive or negative impact on humankind.

Students will choose how they will present their information, e.g., presentation software, movie, magazine/newspaper article, booklet.

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:

Causation
Change
Connection
Perception

Related Concepts: measurement, drawing conclusions, observation, investigation, analyzing, scientific inquiry

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

- Exploration of energy, including mechanical, light, thermal, electrical, and sound energy
- Demonstrate the flow of electricity
- Testing the effect of force on an object
- Demonstration of refraction and reflection

What teacher questions/provocations will drive these inquiries?

- What is energy? How does energy affect our lives?

	● How do we use different energy forms? ● How does electricity travel? ● Electricity can be transformed into which other forms of energy? ● What is necessary to have energy flow through a circuit? ● How does light energy travel? ● How can the path of light be changed? ● What do you observe when the path of light changes? ● What is a force? How can we demonstrate forces? ● How can forces change an object's movement, shape, or position? ● How could you create an investigation to test the effect of a force on matter? ● How does your understanding of electrical circuits change your conceptions of how electrically powered machines operate? ● Due to refraction, we often do not see objects as they truly are.. How does this change your perspective of your abilities to perceive the world around you? ● Energy can be be converted from one form to another. How does this affect you in everyday life?

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?

- KWL
- Brainstorming of major discoveries and their uses/effects
- Students will define "belief." Classroom discussion.
- Wonderings Wall

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

Use appropriate scientific reasoning

Work with simple and parallel circuits

Students extend their knowledge through various optional activities

Explain how you identified items that used electrical energy

How could you classify the types of energy produced?

Written reflections about their newfound knowledge has shaped their worldview and perception of their place and abilities within it.

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?

Forces Concept Builder
Students create a paper airplane and design an investigation to test the effect of force on the airplane. Student work should include:

1. A detailed design of the airplane
2. A drawing that shows the forces acting on the airplane as it flies through the air
3. An experiment that shows a variable change and how the change affected the airplane's flight
4. A written explanation of the experiment, including the design, the variable change, an analysis of the data collected, and a conclusion based on the experiment results
5. A visual representation of data collected

Reflection/Refraction Concept Builder
Students design and create a periscope that will reflect and refract light to hit at least three different targets. Student work should include:

1. A design of mirrors and/or lenses that allows light to be reflected and/or refracted to hit at least three targets
2. A student-built periscope
3. A labeled drawing of the periscope design that includes the items chosen and shows how light travels through the periscope to a target
4. An explanation of how and why the mirrors and/or lenses were positioned
5. A written description of how the periscope works using appropriate science vocabulary

Electrical Circuit Concept Builder
Students build a circuit using one energy source and two different types of switches to produce light or sound. Student work should include:

1. A working, three-dimensional model of an electrical circuit with one energy source, two types of switches, and at least two different items that use electricity
2. An explanation of how the circuit works to produce light or sound
3. A diagram that demonstrates the flow of energy and how each item produces either light or sound

5 Forms of Energy Machine Design
Students design an original product with a specific purpose that uses all sources of energy (mechanical, light, thermal, electrical, and sound). Student work should

	include: 1. A labeled diagram or three-dimensional model of a product that uses all forms of energy 2. A presentation and/or written description of the product, including an explanation of how and why it uses all forms of energy 3. An explanation of the specific purpose of the product What opportunities will occur for transdisciplinary skills development and for the development of the attributes of the learner profile? Transdisciplinary Skills: ● Communication Skills: Speaking, Reading, Writing ● Thinking Skills: Knowledge, Analysis, Evaluation ● Researching Skills: Collecting, Organizing, and Recording Data, Research Attributes: Inquirers, Reflective, Communicator

5. What resources need to be gathered?

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

Stem Scopes, Study Island, Science Fusion, library books, Discovery Education, 5th Grade Science Energy Videos-youtube.com

William Kamkwamba, Energy for Every Kid by Janice VanCleave,

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

The schools computer and science labs will be used to research and learn concepts. Classrooms will be rearranged to allow for experiments and inquiries.

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.

As we reflect on the planner, all teachers are in agreement that we need to change the central idea. Students were learning about energy and force and motion and did not connect this with how their beliefs and values help them understand. .

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

The assessment we have is a summative project. We need to change our assessment so that it is an assessment of the students understanding of the central idea that they are able to do individually and in one sitting.

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

There were no connections that we found therefore we need to revisit this planner and change certain aspects to have better connections for next time. We will need to change the central idea to connected with the academic topics we are teaching or we need to change what we are teaching.

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?"
- demonstrate the learning and application of particular transdisciplinary skills?
- develop particular attributes of the learner profile and/or attitudes?

In each case, explain your selection.

Key Concepts:

Causation: Building an airplane and observing the effects of force on the airplane.
Change: Looking at examples of refraction and how that changes our perspective of the imagine begin refracted. (straw in a glass of water)
Connection: Students design an original product with a specific purpose that uses all sources of energy (mechanical, light, thermal, electrical, and sound). Student work should include work to show how the types of energy are connected.

Transdisciplinary Skills:
Communication Skills: students used their reading and writing skills to show their understanding of how energy makes things work

Thinking Skills: students need to know and analyze the difference between reflection and refraction

Researching Skills: Students will collect data on the airplane and how it reacts and organizing their data

Attributes

Inquirers: students will ask and answer questions throughout the entire planner.

Reflective: students will reflect on the different types of energy and how they are different and similar

Communicator: students need to be detailed communicators to ensure understanding by all.

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.

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.

What student-initiated actions arose from the learning?

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

9. Teacher notes