



Planning the inquiry

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| <p><b>1. What is our purpose?</b></p> <p><b>1a) To inquire into the following:</b></p> <ul style="list-style-type: none"><li>● <b>transdisciplinary theme: How the World Works</b></li></ul> <p>Inquiry into the natural world and its laws, the interaction between the natural world (physical and biological) and human societies; <b><u>how humans use their understanding of scientific principles</u></b>; the impact of scientific and technological advances on society and on the environment</p> <ul style="list-style-type: none"><li>● <b>central idea</b></li></ul> <p>Energy affects our everyday life.</p> | <p>Class/grade: 1st                      Age group: 6-7 years old</p> <p>School: Poe                      School code: 49497</p> <p>Title: How the World Works</p> <p>Teacher(s): Randall, Teague, Stilkenboom, Hubbard, Ford, Quevedo</p> <p>Date: December 7, 2020 - January 28, 2021</p> <p>Proposed duration: 6 weeks</p> |
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**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?

Possible new summative assessment:

Students will choose a form of energy and be able to show or explain how it affects their everyday life and how they can conserve energy

**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?

- causation
- function
- change

Related Concepts: matter, energy, forces

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

- Types of energy (sound, heat, light)
- How energy changes matter
- Conservation (saving energy)

What teacher questions/provocations will drive these inquiries?

- What are 3 types of energy? (light, heat, sound)
- What are examples of energy around you? How do you know?
- How can energy affect or change things around us?
- What are ways we can conserve energy

### 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?

#### **Pre-Assessment**

Create a KWL on types of energy.

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

#### **Formative Assessments**

- students will record findings after experiments in science journals.
- Trifold: light, heat, sound 3 examples of each

### 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?

- Students will observe temperature changes using a thermometer (integrate with math unit)
  - Students will determine the mass of various objects using balance scales (integrate with math unit). Students will predict what is heavier and lighter.
  - Experiments changing from one state of matter to another:  
solid to liquid: rubbing chocolate chips to heat up to change to a liquid  
liquid to solid: water (or liquid) in freezer to make popsicles
  - Grow plants and discuss how energy affects plants
  - Students will make their own balance using hanger and plastic cups (see unit 4 HISD planning guide)
  - Sound, heat, light energy we plan to do classroom rotations  
Sound- hanger attached to string and cup and bang items around room, place tuning fork in a cup of water to see the water splash, hang the styrofoam and flick the rubber band near it to see it move without touching it, ping plastic ruler on desk and watch it vibrate, make kazoo  
Heat- go outside and feel sun rays, put hand in front of flashlight, .  
Light- sort light sources, put brick on sheet of construction paper and observe changes.
- What opportunities will occur for transdisciplinary skills development and for the development of the attributes of the learner profile?
- thinking- access prior knowledge and build onto with new gained information, making connections between ideas,
  - research- formulate questions to collect and record data observed, draw conclusions from results

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**5. What resources need to be gathered?**

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

materials: chocolate chips, zip-lock bags, baking soda, balloons, vinegar, popsicle sticks, dixie cups, hangers, string, flashlight, crayons

videos on energy and matter (BrainPop Jr., united streaming)

**Inquiry boxes**

Unit 4 HISD Planning Guide

Unit 5 HISD Planning Guide

IB Inquiry Boxes SHADOWS AND LIGHT and\_(located in the library)

**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.

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.

More science experiments were done this year and the concept of changing matter was more clear to students:

Jello, Melting chocolate, Juicing fruits and vegetables, freezing of juice,

Watched videos of how people use rocks – United Streaming “How we Use Rocks”

Shell- Natural gas transportation video

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

- Students noticed how matter changed states.
- Students identified states of matter as they used the objects.
  
- Rocks are used for metal which is made into many useful items.
- Students understood that matter is everything in the world
- They also understood that things are made and changed through forces

**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?”
  - Change: Heat and cooling caused changes in states of matter by using
    - ice cubes, sun, freezer
    - crayons and hair dryer
    - chocolate and body warmth (knowledge)
  - Function: Sound energy- traveling through string and hearing/feeling vibrations
- demonstrate the learning and application of particular transdisciplinary skills?
  - Created diagram of matter changing states from heat and cooling
  - Listing ways to use a particular matter (thinking)
  - Observing changes in matter and how others used matter (research skills)
  - Sorting matter (thinking)
- develop particular attributes of the learner profile and/or attitudes?
  - Inquirer- Experiments and asking questions about how things changed and what was matter
  - Thinker- Ideas on how to use different matter
  - Curiosity- Wanting to know more about matter around them (everything)

- Students made the connection between plastics come from petroleum and when petroleum runs out in the world that there would be no more toys and things made out of plastic

- Appreciation- Give thanks for having many different resources because they provided us with many things and have many different uses

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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.

Students questioned how things are made and what they are made from.

Change became a theme in one teacher's classroom: therefore students saw change in everything in the world.

Students realized that they should recycle more as we could run out of resources. Students especially were aware that they should recycle plastics due to petroleum not being a renewable resource.

Students thought how it would be important to plant trees as so many things in the world are made out of trees.

*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.

Students still identify many objects as types of matter that they found throughout the year.

**9. Teacher notes**

Some teachers feel like this is too science focused and should be made to include other subject areas, such as Fine arts (art, music). Change of weather can use temperature measurement

Students did not score the self-reflection as high as the teachers thought they would. Although students seemed to enjoy the experiments and the Unit of Inquiry. We think that we need to make connections for the students so that it is more meaningful to them. Possibly changing the summative task may help.

Students could use cream and shake it and turn it into butter to show kinetic force

A teacher felt successful tying it into nouns and adjectives (adjectives with properties of matter- worked really well).

An architect visited a class and talked about turning solids into a structure or home

Field trip to Children's Museum should coincide with this unit

They became more aware of what is around them and they verbalized these findings/discoveries.

Students have started to recycle more. We have brought a recycling box in the classroom. We are also recycling plastics in the library.

