

# Y2 EDP Phase 2 Project Session #2

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Presented by Kaholo Daguman  
Pacific American Foundation



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## In the news lately:

- **Better Teachers Are Needed to Improve Science Education – Joshua Hatch**
- **Will New Standards Improve Elementary Science Education – Lillian Mongeau**
- **30 Best Science Websites for Kids (Chosen by Teachers)**



# Better Teachers Are Needed to Improve Science Education – Joshua Hatch

from Nature Outlook: Science and Technology Education

“...One realization was that trying to explain concepts and then have students apply them – or worse, simply regurgitate them – did not work. **Instead**, teachers should create projects in which concepts become apparent as students work through real-world challenges.”

In other words,


<b>FROM...</b>	<b>SHiFT to...</b>
<b>explain</b>	<b>explore</b>
<b>apply</b>	<b>apply</b>
<b>explore</b>	<b>explain</b>

**A former science teacher remembers a lesson he taught on gases. He borrowed his wife's perfume bottle and sprayed it around the front of the classroom. He asked the students to raise their hands when they could smell something.**

- The kids were engaged and excited, and then the teacher proceeded to explain what was happening to the gas molecules. The kids' enthusiasm was quickly snuffed out by his "let me explain" lecture.**

## **INSTEAD,**

- What he should have done, he now knows, is ask his students: “What would cause the scent of the perfume to reach all the way to the back of the classroom?”, and **START A DISCUSSION. Asking that question would empower the students to use their knowledge and imagination to develop scientific ideas about the concept being discussed.**



**Instead** of “learning about,”  
“it’s about ‘figuring it out’.”

- -Peter McLaren, the teacher



# Peter McLaren

- **Taught General Science in Rhode Island**
- **Executive Director, Next Gen Education**
- **Helped write the NGSS**



# Castle Complex EDP Phase II Project (2018 – 2021)

## Grant Terms and Conditions

- **OUTCOME 4:**

Development of rigorous engineering design challenge units which require students to overtly address the five EDP components. These units will be developed by grade level teams and facilitated by curriculum mentors during the scheduled Work Sessions and through online coaching.

- **Session #3 – Saturday, January 18, 2020**

# Backwards Mapping / UbD

- **Begin with the end in mind**
- **Our last session (#4) together: March 28, 2020**
- **Mini presentation/ Teacher sharing**
- **What unit you worked on (or still working on) – what worked, what didn't**

# UbD STEM Unit Plan Template

- Stage 1 - Desired Results
- Stage 2 - Assessment Evidence
- Stage 3 - Learning Plan

## Suggested topics/challenges for semester 2 projects for EDP Phase II

Grade K: **Designing windmills**

Grade 2: **Water filtration**

Grade 3: **Earthquakes**

Grade 4: **Solar oven**

Grade 5: **Egg drop/helmet/safety**

Grade 6: **Roller coaster**

Grade 7: **Hand pollinator 7<sup>th</sup> grade (Jeffrey, SPED King)**

Grade 8: **Sand erosion at beaches/shorelines**

Grade 8: **Other (sensors to measure tides and other parameters in Kāneʻohe Bay/Waikalua Loko?)**

## For this 2<sup>nd</sup> Quarter Task:

- EDP Activities - 5 to 7 days (at least)
- Use the **Performance Task Creator Plan** template
- Suggested Topics: refer to Boston Museum of Science Engineering Tool Kits

# From Performance Expectations To “I Can” Statements

- **Students will be able to...**
- **Catching the Wind: Designing Windmills  
(Grade K)**
- **K-ESS2-1. Use and share observations of local weather conditions to describe patterns over time.**
- **DCI: K-ESS2 Earth's Systems**



# From Performance Expectations To “I Can” Statements

**K-ESS2-1. Use and share observations of local weather conditions to describe patterns over time.**

- I can describe local weather conditions
- I can use my observations of local weather conditions to describe the weather.
- I can share my observations of local weather conditions
- I can use my observations to describe weather patterns over time.



Suggested Topic:  
*A Stick in the Mud: Evaluating a Landscape*

Boston Tool Kit - Grade: 3

**Performance Expectation:**

- **3-ESS3-1. Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.**
- **DCI - 3-ESS3 Earth and Human Activity**
- **Create “I Can” Statements from the Performance Expectation**

Suggested Topic:  
**Now You're Cooking: Designing Solar Ovens**

Boston Tool Kit - Grade: 4

## Performance Expectation

- **4-PS3-4. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.**
- **DCI - 4-PS3 Energy**
- **Create "I Can" Statements from the Performance Expectation**

**Suggested Topic:**

**Water, Water Everywhere: Designing Water Filters**

**Boston Tool Kit - Grade: 5**

**Performance Expectation:**

- **5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.**
- **DCI 5-ESS3 Earth and Human Activity**
- **Create "I Can" Statements from the Performance Expectation**

# **Boston Museum of Science Engineering Education Kits**

## **Available Kits at Kāneʻohe Elementary School:**

- A Stick in the Mud: Evaluating a Landscape (Gr 4)**
- Now You're Cooking: Designing Solar Ovens (Gr 4)**
- Lighten Up: Designing Lighting Systems (Gr 1)**
- Catching the Wind: Designing Windmills (Gr K)**
- A Sticky Situation: Designing Walls (Earth Materials) (Gr 2)**
- The Best of Bugs: Designing Hand Pollinators (Gr 1)**
- Water, Water Everywhere: Designing Water Filters (Gr 5)**



# Your Planning Time