Monday, October 12, 2015

**LT:** I can engineer a solution to a problem with given criteria and constraints and I can evaluate unintended consequences of my solution.

**Entry Task:** What two types of measurements are we taking of your Egg Drop container today? What units will we use?

**Today:**
- Egg Drop!
- HW: Finish Ch. 2 Reading & Questions

**Before the drop:**
1. Make sure your name is on the container.
2. Place the egg your teacher provides into your container. Seal.
3. When your table group is called, bring your container up to be massed and measured.
4. Put container into the large plastic bag.

**After the drop:**
1. After all eggs have been dropped, retrieve your container.
2. Sort container remnants into "trash" or "compost" containers (tape, balloons, and rubber bands must go into trash, even if it is biodegradable).
3. Return unbroken eggs to your teacher.
Tuesday, October 13, 2015

LT: I can engineer a solution to a problem with given criteria and constraints and I can evaluate the success and any unintended consequences of my solution.

Entry Task: What real world technology could your egg and your egg drop container simulate?

https://www.youtube.com/watch?v=d7iYZPp2zYY

Today:
  - Stamp Ch. 2 Qs
  - Egg Drop Analysis - Constraints, Unintended Consequences & Redesign
  - Procedure Notes
  - HW: Unit 1 Review Sheet
Look at "Scoring Rubric for Application Items" in the back of your comp book. You will write about the following:

Constraints - Identify 2
Format: "________ was a constraint for my egg drop solution. This was a limitation because __________." 

Unintended Consequences - Identify 1
This could directly impact your solution or another part of the system your solution is part of.

Redesign- If given the opportunity, how could you redesign your technology to optimize the effectiveness? Think about increasing safety, limiting size, limiting mass and/or making it more biodegradable. Sketch your new design.

<table>
<thead>
<tr>
<th>Main Idea</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procedure</td>
<td>A numbered list of logical steps - each step starts with a verb.</td>
</tr>
<tr>
<td>3 types of variables:</td>
<td></td>
</tr>
<tr>
<td>Independent (Manipulated)</td>
<td>What you are changing. Ideally there should be at least 3 levels of change.</td>
</tr>
<tr>
<td>Variable</td>
<td></td>
</tr>
<tr>
<td>Dependent (Responding)</td>
<td>What you are measuring. You must include how this will be measured with units.</td>
</tr>
<tr>
<td>Variable</td>
<td></td>
</tr>
<tr>
<td>Controlled Variables</td>
<td>at least 3 – what you are keeping the same. 3rd controlled variable counts for validity. (Remember, extra validity can also come by: additional levels, better measurement equipment/techniques, statements about cleaning or resetting equipment, etc.)</td>
</tr>
</tbody>
</table>

Procedure Notes
### Practice Writing Logical Steps

In your group, talk about how you would explain to a five year old how to tie their shoe.

Write a **numbered list** (at least 8 steps long) of **logical steps** that will result in successfully tied laces.
EXIT TASK: What is the difference between controlled variables and the experimental control condition (control group)?

Wednesday, October 14, 2015

LT: I can demonstrate knowledge of the scientific method, measuring and the engineering design process.

Entry Task: You always measure 100 ml of water for all the conditions in your lab. This is what kind of variable?

You set up your lab with one group getting no salt and the other group getting 1, 2 and 3 grams of salt. The no salt group is your _________________.

The 1, 2 and 3 grams of salt are different _________ of the independent variable.

Today:
Ch. 2 grading. Garden soil review.
Unit 1 Review Sheet - go over at the end of the period.
Ch. 2 Questions  +______/25

2.1 Review

2. A hypothesis is an unproven or preliminary explanation that can be tested. A theory is an explanation of why or how something occurred that is supported by lots of evidence collected over a long period of time. A natural law is a rule that is obeyed by everything in the universe. (+3)

3. b (+1)

5. Repeatable means that anyone else who performs the same experiment in the same way observes the same result. (+1)

6. b (+1)

2.2

2. If you change more than one variable at a time in an experiment, you won't be able to easily tell what change affected the results. (+1)

3. An experimental variable is the thing you are testing or changing in the experiment. Control variables are the things you keep the same from trial to trial. An example is if you design an experiment to test the effect of different amounts of sunlight on plant growth; the experimental variable is the amount of sunlight and some control variables would be type of plant, amount of water, and temperature. (+4)
5a. Which cup keeps hot cocoa hot for the longest time? (+1)

b. If you put cocoa in the foam cup, it will keep the cocoa hot longer than the plastic or paper cup because foam insulates the cocoa. (+2)

c. The experimental variable is the type of cup. (+1)

d. Three control variables are size and shape of cup, starting temp, and amount of cocoa. (+3)

2.3

3. Science examples are b, c, e and g. Examples of technology are a, d, f, and h. (+4)

4. If a prototype car only went through one engineering design cycle, it would most likely have many design flaws. Good engineering usually involves the building and testing of several prototypes under a range of conditions. The best inventions go through the cycle many times where they are improved in each cycle until all the problems are worked out. (+3)
<table>
<thead>
<tr>
<th>Design Process Stage</th>
<th>Points</th>
<th>Your Points</th>
<th>What was written?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research the Problem--information needed</td>
<td>1</td>
<td></td>
<td>(look for descriptions of scientific information needed)</td>
</tr>
<tr>
<td>Scientific Research--where to collect info</td>
<td>1</td>
<td></td>
<td>(look for where the information will be gathered)</td>
</tr>
<tr>
<td>Explore Ideas - list several solutions</td>
<td>1</td>
<td></td>
<td>(look for several solutions to the problem)</td>
</tr>
<tr>
<td>Explore Scientific Ideas - sci. concepts described</td>
<td>1</td>
<td></td>
<td>(each solution must contain scientific reasoning)</td>
</tr>
<tr>
<td>Criteria - used to evaluate success</td>
<td>1</td>
<td></td>
<td>(look for criteria you could use to determine if the solution is working)</td>
</tr>
<tr>
<td>Constraints - identify limitations and why</td>
<td>1</td>
<td></td>
<td>(look for things that could limit your project and explain why it is a limitation)</td>
</tr>
<tr>
<td>Unintended Consequences - of the solution</td>
<td>1</td>
<td></td>
<td>(something bad that could happen as a result of your solution)</td>
</tr>
<tr>
<td>Unintended consequences - effects on system</td>
<td>1</td>
<td></td>
<td>(describe an effect on another part of the system)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>8</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

EXIT TASK: Why do we do more than one trial in an experiment? Why do we try to control variables?
Thursday, October 15, 2015

LT: I can demonstrate knowledge of the scientific method, measuring and the engineering design process.

Entry Task: What typically happens at the end of one cycle of the Engineering Design process?

Today:
Unit 1 Test

We will grade the Entry/Exit Tasks for this week on Monday!