**Building- Testing Materials – Topic C**

Visual: Pictures of students doing experiments on poster!

Audio: My explanation

Kinesthetic: performing experiments

What do they need to know?

1. Recognize that functional structures must be sufficiently strong and stable, and that unstable or weak structures are often unsafe to use.
2. Compare and evaluate the stability of different models or objects constructed.
3. Describe the distinctive properties of some common solids such as wood, paper or plastic that makes them suitable for building materials.
4. Apply procedures to test the strengths of construction materials, in particular, different stocks of paper, plastic or wood.
5. Apply procedures to test different designs
6. Apply procedures to test the strength of different methods of joining
7. Identify and apply methods for making a structure stronger or more stable; for example, by adding or joining parts to form triangles.

Prior lessons before task:

**(SLE 3 and 4) Testing different materials**

**Introduce the Word Hypothesis. Each question, Students will make a guess on the clickers.**

**Lesson Question: How strong is each material?**

Materials: Tissue Paper, Construction Paper, Popsicle Stick, Plastercine, and Weights

Procedure: Place weights one at a time on each material, record on the back how much each material held.

Conclusion: If I were to build a structure I would use…because…

**Lesson Question: Is each material waterproof?**

Materials: Popsicle stick, Plastercine, Plastic, Paper

Procedure: Dip each material in the paper. Observe and record what happens?

Conclusion: If I were to build a structure I would use….because…

L**esson Question: Does the material easily tear?**

Materials: Popsicle stick, Plastercine, Plastic, Paper

Procedure: Try to fold and then cut each material. Record observations on the back

Conclusion: If I were to build a structure I would use …. Because

**Task: Using the materials (5 Popsicle sticks, Paper, Plastercine, Plastic cup) provided create the strongest structure possible. We will test each structure after 10 minutes**.

**Visual**: Students pictures doing experiments.

**Vocabulary**: structure, properties of materials, strength

**What do we know about paper, plastercine, wood and plastic?**

**(SLE 6 & 7) Joints**

To build a structure we need joints to hold structures together. Some joints are stronger than others.

**Lesson Question: What joint is the strongest?**

Materials: Toothpicks, 8 plastercine, 8 pieces of tape, 8 marshmallows, glue, 8 pipe cleaners.

Procedure: Create a different cube for each type of joint. How much weight will each cube hold? Record your observations.

Conclusion: If I were to build a structure I would use…..because…

**Task: Choose one type of material to create a joint. Create the strongest structure possible using 20 toothpicks and the materials for your joints. We will test these after 10 minutes.**

***Visual: Students doing experiments***

***Vocabulary: joints***

**(SLE 1& 2) Stability**

**Lesson Question: What is a stable and unstable container?**

Materials: different types of containers with different bottoms, wood.

Procedure: Create a slide with your piece of wood. Tip the wood and see which container will make it all the way down without tipping.

Conclusion: Structures with wider bases are more stable.

Task: You need to create a structure that is safe and stable using materials in the classroom. Your structure will be tested and marked as follows:

* Holds 1000 grams
* When it is shook it stays together
* Is visually appealing
* The joints hold the structure together
* The structure is waterproof

Please draw a diagram of the structure you plan to create. You need to then make a list of the materials you need. Remember you will only have 2 45-minute classes to create your structure.

How do I know they know?

* Checklists
* Final test
* Final Task

Can they show me a strong and stable structure compared to an unstable and weak structure? (They create this, Kinesthetic)

Through experiments decide which materials were stronger and why they would be suitable for building with. (Kinesthetic)

Through experiments and procedures test different types of materials. (Kinesthetic)

How can I encompass visual, audio and kinesthetic learning through the process, and make connections?