**Dyeing to Design Student Packet**

**Eng**i**neering Design Plan**

**EDP Step #1: Ask - Identify Needs and Constraints**

**KWL Chart**

|  |  |  |
| --- | --- | --- |
| **K: What I Know** | **W: What I Wonder** | **L: What I Learned** |
|  |  |  |

**EDP Step #2: Research**

Divide your team into 2 research teams to investigate questions you have from the “W” section of your chart above. Write what you find in the “L” section.

**EDP Step #3: Developing Possible Solution to Problem**

1. Visual description of up to four different colors in fabric sample.
2. Desired color for dye:
3. Solute (material) to be used:
4. Solvent to be used:
5. Method to be used for extraction:
6. Concentrations:

|  |  |  |  |
| --- | --- | --- | --- |
| **Group Member** | **Amount of Solute (g)** | **Amount of Solvent (mL)** | **Concentration (mL)** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

**EDP Step #4:** **Select Best Possible Solutions**

1. Fabric Sample RGB Values:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Location** | **Visual Color** | **R-value** | **G-value** | **B-value** |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

1. RGB values of each concentration:

|  |  |  |  |
| --- | --- | --- | --- |
| **Concentration** | **R-value** | **G-value** | **B-value** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

**EDP Step #5 & 6: Select the best possible solution(s) & Test and Evaluate**

1. RGB values of each material in each concentration:

Place a \* beside the materials that you will be using on your design pitch board.

a. Concentration #1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Material** | **Visible color** | **R-value** | **G-value** | **B-value** |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

b. Concentration #2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Material** | **Visible color** | **R-value** | **G-value** | **B-value** |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

c. Concentration #3: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Material** | **Visible color** | **R-value** | **G-value** | **B-value** |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

d. Concentration #4: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Material** | **Visible color** | **R-value** | **G-value** | **B-value** |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**EDP Step # 7: Redesign**

10. How would your group change your methods (extractions, concentrations, applications, materials, etc.) to improve on your results?