|  |  |
| --- | --- |
| **PBL Lesson Plan: 1** | |
| Content Area(s)/Course/Grade: **MS Math/STEM** | Unit: **PBL Water Conservation: Why is saving water important?** |
| Lesson Topic: **Saving Water Now: The Water Conservation Problem** | Lesson 1: **Salt vs. Fresh Water** |
| Indicator(s)/Sub-Outcome(s)/Expectation(s):   * Students can reflect on the ratio of salt to fresh water and the importance of water conservation. | |
| Student Outcome(s): **SWBAT…**   * Discuss how water plays a pivotal role in our everyday lives * Discover how much of all the Earth's water is freshwater | |
| **Materials for Learning** | |
| * 1 cup clear cup * 1 sponge either per student * Eye dropper * Large clear bin * Large tray * Food coloring (blue) * Globe or Map * KWL chart (or a notice and wonder chart) | |
| **Instructional Delivery** | |
| Opening Activities/Motivation:   * Start with talking about the importance of water. Why is water important? How do we use water? What do we use it for? * Next discuss, where can water be found? When we look at a map or global water signifies water? (leading towards bodies of water). * Discussion the two categories of water, salt and fresh, and their location on the map/global. Which does there appear to be more of? Why is this important to know? (maybe have them reflect privately before they share out) | |
| Activities:  Activity 1: Understanding how much freshwater and saltwater there is on earth (Other Option would be for students to pair up and complete these steps as a pair.)   * Pour enough water (with blue food coloring) in the clear bin so that it is visible to the students. This water will represent all the water on Earth and all the bodies of water mentioned before (refer to the map/global) * Have the student observe as you remove 3% of the volume of water from the bin using an eye dropper, placing it into the clear cup for comparison. * The 3% represents the freshwater on Earth. * Have the student reflect about what they notice and wonder. * Understanding the ratio of salt to freshwater is important to understanding the problem. Fresh water is not an endlessly abundant resource on the Earth.   Activity 2: Understanding the effects of population growth on water consumption rates (Other Option would be for students to pair up and complete these steps as a pair.)   * Using a large tray, create a puddle using the water from the bin or from another source. * Have the students gather around the table so they can all see the large puddle of water. * Hand a dry sponge to each student, each sponge will represent a person who lives where it is very hot and barren, and the only source of water is a tiny pond which is represented by the puddle. * Have the student place the dry sponge in the center of the puddle. The sponge represents the person and the water that they consume over a period of time. Where did all of the water go? * Have students reflect on their noticing and wonderings   Review the Activities and have students share their Noticing and Wonderings.   * Ask the student to make conjectures, What if the sponge was larger? What kind of societies and environments could we find people who could be thought of as large and small sponges? * Share real-world examples of societies/environments that are large/small sponges. | |
| **Assessment/Evaluation (Formative/Summative)** | |
| * **Students reflect on what they learned** * **Why is water conservation important?** | |
| \*Replacements for Lesson Activity - Earth’s Water Background to the Problem  Nearpod Link: <https://share.nearpod.com/e/kxhD0CrGogb>  Video Link: <https://www.youtube.com/watch?v=oaQCiwzjnCM> | |