Lesson Plan: Chemicals and Estimation

Lesson Name: Sink or Float Liquid Tower

Lesson Type small groups. Inside/Outside

Enduring Understandings: The purpose of this activity is to give children an understanding on density and buoyancy objects when estimating mixing of liquid chemicals.	**Overarching Question: Child-friendly question that connects the knowledge and skills that children should develop throughout the lesson Ex.** Why do the items sink or float in liquids? **Content Questions:** Why do the liquid chemicals not mix? What is density? What is gravity? What does float mean? What does sink mean? What is estimation? What is heavy weight/ light weight? What is buoyant mean?
Objective(s): By the end of the lesson the children will…aligned to your chosen standards, and using Bloom's Taxonomy verbs (see link below): https://www.apu.edu/live_data/files/333/blooms_taxonomy_action_verbs.pdf, By the end of this lesson children will… • Identify objects floating or sinking based on weight • Discuss gravity and density • Collect data to share with peers • Note their predictions, observations, and results • Build chemical liquid projects	
Standards: CCCS (grades k-3) within Earth Science 4e. students knowing the position of the Sun changes in the sky during the course of the day season to season. Investigation & Experiment 5c-e. collecting data and reading/ compare contrast numbers investigate the data of their predictions. CCCM (grades k-3) represent and interpret data	**Assessment of Objective(s):** In small groups, children will be able to data track their estimation predictions if items will sink or float in the liquid chemicals.
Materials: worksheet to write down data, tall clear cup, water, food dye, syrup, oil, small/big objects ex: screws, pennies, ping pong ball, water cap, rock	**Vocabulary:** compare & contrast, heavy weight, light weight, estimation, gravity, density, chemical, sink, float, buoyant, particle, liquid
Anchor texts: Things That Float and Things That Don't by David A. Adler	

Learning Center Extension: Water center: being done inside or outside while having different tubes, cups, buckets to mix different chemical liquids together and finding objects to drop in the chemicals while estimating how much liquid is needed

Plan for Assessment during lesson: During this lesson, checking if children can use estimation and predictions while observing if objects are sinking or floating in the liquid chemicals. After checking the children's knowledge about the sink or float of objects, ask if the children can identify any limitations.

Formative Assessments (required): The teacher will be watching for if the children are able to see the difference between the liquid chemical layers. Also, if they understand buoyant and dense objects. As this is a group activity, teacher will be watching for group participation and seeing if children can come up with educated predictions/observations.

Procedure:

1. Put the class into small groups
2. Pass out the loose part objects that will be used making sure there is enough for each student
3. Separate the liquid chemicals that the children will be using (water *2-3drops food color, oil, syrup)
4. Have the children make a prediction on what will happen with the liquid chemicals and using estimation on much liquid will be needed
5. Have the children pour the liquids into the clear glass; after pouring write down what they observed
6. Then have the children depending on what objects are being used write down their sink or float predictions
7. The children will then write down their item results from what they observed
8. Ending the lesson, in their small groups children will discuss why some items sunk/floated in the liquids.

Hook: Talking to the children about buoyant and dense objects during the week. Talk about estimating liquid chemicals and discuss how not all liquid chemicals can mix.

Beginning: The purpose of this activity is to give children an understanding on density and buoyancy objects when estimating mixing of liquid chemicals.

Middle: Being in groups collecting prediction and observation data of the objects within the liquid chemicals.

End: This activity can be extended to be done at home or depending on the topic of the month find objects for that month to test out.

Family Engagement: Encourage the students to find creative ways to use estimation at home with their families and building liquid chemical towers with their families that represent their culture.

Differentiation: (not necessarily for children with disabilities, differentiation supports all learners)

For children who need additional support: If children cannot see the different layers of liquid chemicals in a tower form, separate the liquid chemicals in three separate clear cups so that way the children can see clearly if objects are sinking or floating. **For children who are ready for a challenge:** Ask the children to think of a way that they can make the liquid chemicals mix and with the mixture does it change the prediction of the objects sinking or floating.
Children with documented disabilities: Give extra time for children to gather the information.
Children whose home language is a language other than English: Find books in other languages that talk about the sink or float objects. Label the activity in the language of the classroom. Have children pick the items that they are most familiar with from their culture.
Planning for worst case: Have activity sheets ready that lets them draw their own version of a liquid chemical tower while estimating how much liquid will be needed (glue objects on the sheet for predictions).
Plan for action if the above happens: Have loose part items ready for gluing and extra cups to the side if children want to test their predictions after gluing.
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