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| **21st Century Lesson Cycle Template** | | |
| **Grade: 8 Subject: Science**    **Unit: Density** | | |
| **Driving Question: Why does pure water, salt water & vegetable oil “stack” in a specific order in a flask? Why does one appear to “sink” to the bottom?** | | |
| **Curriculum Outcomes: Science GCO**  Choose an item.  Choose an item. | | |
| **Expected Time:**  **1.5 hours – 2 classes**   * **This lesson will take a few classes and time may vary depending on the class** | | |
| **Resources:**  **Science Lab (or classroom), salt water , Pure Water, cooking oil Flasks, IPad, salt, internet ,**  **Edmodo APP** | | |
| **Lesson Procedure** | | **21st century skills** |
|  | Teacher does (I Do):  Prior to class:  -Take three flasks and pour 200ml of salt water in one, 200 ml of water in another and 200 ml of vegetable oil in the last. Put different food coloring in the pure water and saltwater flask to identify them.  - Pour all three liquids in one large flask and wait for them to separate  - Write the group codes for Edmodo for the following lesson on the board  During class  - Explain the concept of density using the examples of solid liquid and gas…. (draw on board). (Ask students how they think molecules should be drawn for each and draw on smart board (Students can use bingo counters at desk to mimic what is on smart board for solid, liquid, gas) | find, validate  remember, understand  **collaborate, communicate**  analyze, synthesize  **critical thinking**  evaluate, leverage  **create**, publish  **citizenship** |
| Individual student work (You Do):  -Have students draw molecules on their iPad, loose leaf, or use bingo counters to represent solid, liquid and gas.  - Explain to group(s) that liquids are interesting because they are the “in-between” stage and different liquids have different densities  - Show them the colored flask with the three liquids (all different colors)  -Ask the group(s) to guess what the liquids are and post their guesses on Edmodo in the group post titled “guess the liquids and their order.” (If there are several students then there will be more guesses. Guess from top to bottom)   * As a whole class, go to endmodo and look at the different guesses that were posted. The teacher can record some of these results on the board. * (Try poll everywhere website -)   \* Depending on how old your students are or the length of class this may take a whole class period. This in itself is the first lesson of two\*  \*This part of the lesson should be completed in a science lab\*  - Have the student(s) put 200ml of salt water in a beaker (add salt to tap water) & add food coloring, and 200 ml of tap water (add different food coloring) in another beaker, and 200 ml oil in another, add all together and see which liquid is the most and least dense.  - Student(s) discuss in their group which liquid is the most dense, least dense and in the middle. (They should conclude that salt water is the most dense, then fresh water, then oil)  - Once the student or group has determined which liquids  are the most and least dense, they should then sign in to  edmodo and submit their answers to the following questions on the assignment titled “Stacking liquids.”   1. What is the order (from top to bottom) of the liquids in the jar? 2. Which liquid is the most and least dense by looking at the jar?   Show the students the screen cast on densities (shows the lab they did in two min)   * Explain that this is what they should have found. * Have the class then take another poll on edmodo that is titled “The three densities.” (Here students are given three liquids and their densities. They are to quickly choose which order they would be stacked in from just looking at their densities. You will make up the liquids and their densities, or you can research the actual density to make it accurate - 5 min) * Show the results to the class from the poll (all the results should be the same). | find, validate  remember, understand  **collaborate, communicate**  analyze, synthesize  **critical thinking**  evaluate, leverage  **create**, publish  **citizenship** |
| Group work (We Do):  - Compare the polls from edmodo and discuss how accurate the results were  - Reiterate what the results should be and identify why there might be differences in the results | find, validate  remember, understand  **collaborate, communicate**  analyze, synthesize  **critical thinking**  evaluate, leverage  **create**, publish  **citizenship** |
| Class share (We Share):  Ask the class  **What order will Pure Water, Salt Water & Vegetable Oil “stack” in a flask? Why does one appear to “sink” to the bottom?**  **The answer is all about density ☺**  (Answer the driving question and ask the class to correctly order the liquids from the lab) | find, validate  remember, understand  **collaborate, communicate**  analyze, synthesize  **critical thinking**  evaluate, leverage  **create**, publish  **citizenship** |
| **Lesson Wrap Up:**  Clean up the lab and ask students if they can guess any liquids that are denser then salt water. | | |
| **Differentiation/Modification/Enrichment:**  For studenst with LD’s I would have them work in larger groups or even one on one in the resource room. I might modify the amount of posts for specific students and just have them put their guess and the end conclusion  - Enrichment – what about a question about density about gases, Why do firefighters ask you to stay on ground when surrounded by smoke? | | |
| **Assessment:**  - Assesment is based on posts to the edmodo form and polls. | | |
| **Teacher Reflection:**  **Tried this with 2 students who missed the lab in their regular science class. They found the edmodo posts a bit boring and useless, with which we discussed as a small group what they should have found. I would use the edmodo with the class, however in small groups or with students with IPP’s this will take longer (need more time for this)** | | |