**Cassie Bineger Unit:**

**Science lesson on “THE OCEAN”**

**Grade Level:** 3rd to 5th Grade

**Integrated disciplines:** Literature, Art, Science

**Nebraska Standards:**

 LA 5.1.4.b Read words and phrases accurately and automatically

 LA 5.1.6m Build and activate prior knowledge in order to identify text to self, text to text, and text to world connections before, during, and after reading

**Objectives:
Students will be able to:**

**List and describe each of the five layers of the ocean.**

**Follow through with guided instruction to create an experiment/ visual of the five layers of the ocean.**

**Make connections to the book on what they have learned about the environment of the ocean.**

**Assessment:**

**Formative ~ Students will fill out a KWL chart throughout the lesson. At the end of the lesson students will be able to answer any unanswered questions they had at the beginning of the lesson about the ocean and where Cassie Binegar and her family live.**

**Materials:**

A clear jar,

food coloring,

corn syrup,

oil,

dish soap,

water,

rubbing alcohol and funnels.

(You’ll pour 3/4 cup of each liquid into your glass jar for each ocean layer (or less for a smaller jar).)

**Procedures:**

Going from the bottom to the top:

**Trench Zone** (Hadalpelagic Zone)**:**Corn Syrup (tinted [black](http://www.amazon.com/gp/product/B007EQ5P9Y/ref%3Das_li_tl?ie=UTF8&camp=1789&creative=390957&creativeASIN=B007EQ5P9Y&linkCode=as2&tag=ataleoftwoboy-20&linkId=BLRZDBPZHHMC7TMP))

**Abyss** (Abyssopelagic Zone)**:**Dish soap (tinted purple)

**Midnight Zone** (Bathypelagic Zone):  Water (tinted dark green)

**Twilight Zone** (Mesopelagic Zone):  Oil (tinted dark blue)

**Sunlight Zone** (Epipelagic Zone):  Rubbing Alcohol (tinted light blue)

STEPS TO LAYER THE OCEAN:

1. Add some black food coloring to 3/4 cup of corn syrup and pour into the bottom of your glass jar.

2. Mix blue food coloring into 3/4 cup of dish soap. Our dish soap was already blue, but I added a little more blue food coloring to make it darker (in hindsight I would have added less coloring as it was darker than I wanted). Add it to the jar using a funnel.

3.  Put blue food coloring in 3/4 cup of water and use a funnel to slowly and carefully layer it on top of the dish soap.

4.  Next, you’ll add your oil.  Obviously, water in the “midnight zone” is not actually yellow. \*\* Edited to add:  A sweet reader e-mailed and said that you can dye oil using oil-based food coloring found at a bakery supply store or [here](http://www.amazon.com/gp/product/B00006FWVX/ref%3Das_li_tl?ie=UTF8&camp=1789&creative=390957&creativeASIN=B00006FWVX&linkCode=as2&tag=ataleoftwoboy-20&linkId=ONMN3JII76NBQ2KA).

5.  Finally, you will add 3/4 cup of rubbing alcohol.  You’ll want to use a dropper to slowly add it to the top of the oil, making sure not to break the barrier between the oil and water.

\*\*\*Add some labels and put in front of a light source to see the layers best!

\*\*\*Do some research and investigate the creatures that live at each of the depths of the ocean!

**Anticipatory Set:**

Are you learning about the ocean this summer? Teach your students about the five layers of an ocean (also called ocean zones) by creating this layered jar. This is the perfect union of two science experiments: a lesson on environments (connecting the lesson back to the story *Cassie Binegar* and learning about ocean zones.

\*\*\*The depth is characterized by the amount of light that each zone receives. The amazing thing about the ocean is that there are creatures/organisms that live in each of these zones, although most all living creatures/plants live in the sunlight zone.

**Learning Activities**

**Teacher:** Will have students fill out a KWL Chart about the ocean. After, explain to the students that the Binegar family, in the story they have been reading, have moved to a housing development near the ocean. And in this study, they are going to zoom in on the five layers of the ocean. After explaining the meaning of each layer, have the students follow through with the science/ art experiment (including labeling). At the end allow students to pick a layer to research to find out what creatures and/or organisms live in that environment. Ask students to share their findings to wrap up the lesson.

**Students:** Students will fill out a KWL Chart to see how much they truly know about the ocean and its creatures/ organisms living in that habitat. After, students will be put into groups of two or three and will follow through with doing a project/ science experiment that connects with learn about the different layers of the ocean. When the project is done students will then have time to research the creatures that live in their assigned layer given by the teacher. Lastly, students will share with the class their findings.

**Differentiation:**

 **HAL:** Find Oceans on a map and show the route from the Binegar’s House to the ocean and the miles between the two and share this with the rest of the class.

**Resource:** For students who have limited use of hands and arms provide them with a cookie sheet to place their paper and drawing materials so that they don’t slip out/fall away from them.

**ELL:** Teacher could go over some of the basic vocabulary in both English and Spanish before doing the experiment.

**Closure:** Have students finish the KWL.

**Suggested Time Frame:** 45 to 50 minutes

**References:**

***Cassie Binegar* by: Patricia MacLachlan**

[**http://www.eoearth.org/view/article/150442/**](http://www.eoearth.org/view/article/150442/)

[**http://www.icanteachmychild.com/make-ocean-zones-jar/**](http://www.icanteachmychild.com/make-ocean-zones-jar/)

**Reflection:** I feel like this would be a very good lesson plan to include in a… It involves literature, art, and science. I think the students would enjoy this lesson plan because it involves reading, writing, and an art activity/ experiment. This lesson is appropriate for students to do because it gives the students’ knowledge of the ocean which allows the students to get a better picture of where the Binegars live in the story they are reading in Reading class.