Caitlin Cameron 30 April, 2007

The Ocean Floor

Course: Oceanography
Unit Title: Exploring the Ocean
Grade Level: 5-7
Date: Any time of year (spanning a few days)

Lesson Topic: Ocean Floor and its Inhabitants

Key Ideas:
1. Hands-on science experience
2. Demonstrate understanding of the Continental Margin and other components of the ocean floor
3. Explore ocean inhabitants and capable of explaining facts about them

Cognitive Objectives *After lesson students will be able to…*

1. Explain the different levels of the ocean floor.
2. Identify the differences between the West coast ocean floor and the East coast ocean floor.
3. Construct a graph based on data taken
4. Label graph with each component of the continental margin
5. Demonstrate knowledge of ocean inhabitants

Affective Objectives *After lesson students will be able to…*

1. Actively work in groups.
2. Show respect for group members, themselves, and teachers.
3. Develop confidence in own ability to be accurate and precise with measurements taken

Psychomotor Objectives *After lesson students will be able to…*

1. Control emotions when confronted with problems

Materials:

Texts:

- *The Kingfisher Young People's Book of Oceans* by David Lambert (1997)
- *The Living Ocean* by Robert A. Mattson (1991)

Materials:

- Shoebox with a lid – one per group of two or three
- Paper mache materials (flour, water, glue mixed in a bowl)
- Strips of newspaper or newsprint
- Piece of dowel about 25 cm long
- Pencil
- Scissors
- Graphing paper
- Ruler

Connection to Previous Lesson:

- The previous lesson incorporated the ocean in general: introduction to the ocean floor (definitions), ocean circulation (only general, not in depth), effects of the ocean on the planet (climate, weather, etc.), and what lives in the ocean. They will also learn a few differences between the West and East coasts of the United States.

Time	Content	Procedures
Day 1:		
10-15 Min.	1) Engagement	A) In order to get the students further interested in the ocean, I will read two books: *The Kingfisher Young People's Book of Oceans* and *The Living Ocean.* The books will **capture** the students' thinking, help stimulate the knowledge of the ocean that they have previously learned, and it will also stimulate their thinking.
30-40 min.	2) Exploration	A) Students are to draw a quick side view sketch of the continental margin including the edge of a continent, a continental shelf, a continental slope, a basin, a trench, and a range (the definitions of these were discussed in the previous lesson). B) The plan will be checked by the teacher and the teacher will make sure the student correctly identified all parts of the ocean floor. C) Next, students will work in groups of 2 or 3 and will create the ocean floor in a shoebox with paper maché. D) Mix water, glue, and flour in a bowl to make the paper maché. Put the strips of newspaper in the maché, making sure they are wet enough. E) Then, the student will construct the sea floor to the best of their ability – including all the components of the margin (slope, shelf, etc.).
Day 2:		
20-30	Exploration	F) When the maché is dry (or mostly dry) groups cut or punch about 8 holes spaced evenly apart down the centre of the shoebox lid. The lid is then put on the box, hiding the ocean floor.

		G) The students take their graph paper and create a graph with the numbers one to eight along the bottom (number of holes) and about 1-25 (measurement in cm) up the other side. H) Once the graph is set up properly, the students put the dowel in hole #1 until it hits "bottom". The dowel is marked off every cm. Students record the measurement on the graph with a simple dot. This continues for holes #2-8. I) When all of the holes have been measured, the students should join their dots in order using a ruler. When this is done, they should turn their graph upside down and label the parts of the ocean floor appropriately. They should see a representation of the floor they created in the shoebox (once the paper is turned 180°, the margin will be starting from the top right and sloping down to the bottom left). J) After they created their own continental margin, they will do the measuring part of the lesson on two of my shoe boxes – one was created like the East coast of the U.S. and one mimics the West coast continental margin. They will have to identify which is the East coast and which is the West coast from the graph that they will make from the dowel measurements (based on knowledge from the previous lesson).
10-15 min.	3). Explanation	A) Prompt the students with questions about the differences in the coasts (from their graphs). Also, discuss some pros and cons to each coastline – how it affects the land and the ocean (if at all). The class will also talk about the different continental margin features and the importance of all the components.
	4) Extension	A) This part of the lesson will be homework. Students will be expected to find an organism that lives in each part of the continental margin as well as other components (trenches, valleys, etc.). They will do research on those organisms and bring their information to class. This will be tied in with the evaluation from the teacher.

Day 3:		
45-50 min	5) Evaluation	A) Students will get together and compare the organisms that they found for each component of the margin. B) Each group will then pick one organism for each component of the margin to talk about. They can use class time to look up more information and organize the small presentation.
Day 4:		
45-50 min		C) Each group will present their graphs that they did, and discuss the organisms chosen for each component of the continental margin (answering things like who, what, when, where, why, how, what will happen to the location if the species didn't live there, etc.). D) Each student will pass in their graphs, research notes on the organisms they found, and the information their group came up with in order to be evaluated by the teacher.

Assessment Evaluation

Instructor will make observations of individuals' participation and understanding within the groups throughout the lesson in addition to what was discussed above.

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Follow Up

Students will write for 10-15 minutes in their journals to talk about what they learned, why the continental margin is important, why organisms are important, what confused them, share their feelings, etc. In addition, each student will share with the class the two most interesting things that they learned from this lesson activity (which was spread over 4 class periods).

Connection to Next Lesson

Next lesson, students will be better introduced to marine organisms and also how plate techtonics could change the dynamics of the continental margin and the other components.