

Water, Water Everywhere, and Nary a Drop to Drink!

A Study of the Ocean

Grade Level: First Grade

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Length of Unit: Five Lessons (10 days)

I. ABSTRACT

This unit introduces the topic of oceans as found in the *Core Knowledge Sequence* for the First Grade. It utilizes a variety of science and geography activities and reading materials to assist students in learning about the ocean environment. Students will understand that most of the earth is covered with water and will be proficient at locating the four oceans. They will discover that ocean water is salty and gain an understanding of the concepts of coast, shore, wave, tide, and current. They will specifically study the Gulf Stream and have a mental picture of the ocean floor after completion of this unit.

II. OVERVIEW

A. Concept Objectives

1. Develop knowledge of Earth's environments. (Colorado Model Content Standard Geography 1.2)
2. Understand that matter has characteristic properties. (CMCS Science 2.1)
3. Understand the composition of the Earth. (CMCS Science 4.1)
4. Understand the processes of scientific investigation. (Colorado Content Standard Science 1)

B. Content covered from *Core Knowledge Sequence*

1. Review oceans and continents. (Science: Grade 1, VII, A: Geographical Features of the Earth's Surface, p. 39)
2. Understand that most of the earth is covered with water. (Science: Grade 1, I, B: Oceans and Undersea Life, p. 37)
3. Develop an awareness that oceans are salt water unlike fresh water rivers and lakes.
4. Learn concepts of coast, shore, waves, tides (high & low), and currents (Gulf Stream).
5. Develop an awareness of the landscape of the ocean floor.

C. Skill Objectives

1. Students will locate and identify continents and oceans on a map. (CMCS Geography 1.2)
2. Students will identify components of Earth's physical systems and their characteristics (coast, shore, waves, tides, currents). (CMCS Geography 3.1)
3. Students will create mixtures and separate them based on differences in properties (salt water vs. fresh water). (CMCS Science 2.1)
4. Students will label (identify) major features of the ocean floor. (CMCS Science 4.1)
5. Students will record information learned from observation. (CMCS Science 1)
6. Students will ask reasonable questions based on observation, state simple hypotheses, and predict results of an observation. (CMCS Science 1)

III. BACKGROUND KNOWLEDGE

A. For Teachers

1. Carter, Katharine Jones. *A New True Book: Oceans*.
2. Cole, Joanna. *The Magic School Bus: On the Ocean Floor*. New York: Scholastic, Inc., 1992. ISBN 0-590-41431-3.

3. Fowler, Allan. *The Earth is Mostly Ocean*.
 4. Haslam, Andrew and Barbara Taylor. *Make it Work: Oceans*.
 5. Hirsch, Jr. E.D. *What Your First Grader Needs to Know*.
 6. Jeunesse, Gallimard and Elisabeth Cohat. *The Seashore: A First Discovery Book*.
 7. Llewellyn, Claire. *Scholastic First Encyclopedia: Our Planet Earth*.
 8. Moore, JoEllen. *Habitats: Science Works for Kids Series*.
 9. National Wildlife Federation. *Ranger Rick's Nature Scope: Diving into Oceans*. Vol. 4, number 2.
 10. Ortleb, Edward. *Primary Science Resource Guide: Life in the Ocean*.
 11. VanCleave, Janice. *Oceans for Every Kid: Easy Activities that Make Learning Science Fun*.
- B. For Students
1. Three states of matter: solid, liquid, gas
 2. Continents and Oceans: names and locations
 3. Minerals (salt is a mineral)

IV. RESOURCES

- A. Carter, Katharine Jones. *A New True Book: Oceans*
- B. Fowler, Allan. *The Earth Is Mostly Ocean*
- C. Hirsch, Jr., E.D. *What Your First Grader Needs to Know*
- D. Jeunesse, Gallimard. *The Seashore: A First Discovery Book*
- E. Llewellyn, Claire. *Our Planet Earth*
- F. Morris, Neil. *Oceans: The Wonders of Our World*

V. LESSONS

Lesson One: Continents and Oceans Rediscovered

A. Daily Objectives

1. Concept Objectives
 - a. Students develop knowledge of Earth's environments.
2. Lesson Content
 - a. Continents – location and naming of seven continents
 - b. Oceans – location and naming of four oceans
3. Skill Objectives
 - a. Students will locate and identify continents and oceans on a map.

B. Materials

NOTE: Appendices A-G can be put together in booklet form (Student Ocean Booklet) with a blank page for a cover or be used individually throughout this unit if desired.

Individual appendices will be referenced by letter throughout unit for clarification.

1. Globe
2. World Map
3. Transparency of World Map and overhead projector (teacher generated)
4. Teacher copy of Continents and Oceans Song (appendix H)
5. Student-held continent and ocean signs – enough for every child – labeled with names of continents and oceans (teacher created – make them however you choose; with signs, or Popsicle sticks, etc. - some will duplicate)
6. Large “shower curtain” map of world outline (Appendix I)
7. Student copies of World Map Journaling Page (Appendix A) or Student Ocean Booklet (see above note)
8. Transparency of World Map Journaling Page (Appendix A)
9. Crayons or markers
10. *The Earth is Mostly Ocean*, by Allan Fowler

C. *Key Vocabulary*

1. Globe – a ball-shaped representation of the Earth
2. Map- a flattened representation of what the earth looks like
3. Continent- one of the seven main bodies of land on Earth
4. Ocean- one huge body of saltwater that surrounds Earth’s continents, separated into four regions
5. Earth- a huge rocky ball traveling through space; a planet

D. *Procedures/Activities*

DAY ONE

1. Teacher will prompt students for prior knowledge about globe and map of the world. Discussion will follow regarding the presence of continents and oceans. They should know there are continents, which are land and water which is ocean.
2. Teacher will review with students by singing Continents and Oceans Song (Appendix H). Song will be sung three times. After the first singing of the song by teacher to review, pass out signs for students to hold naming continents and oceans while students join in singing the song the second time. Students will hold up signs during singing of song the third time when they hear each name sung.
3. Teacher will have students identify on globe and/or map locations of continents and oceans by calling out specific names of continents and oceans.
4. Child holding that sign will come forward to locate body on map and/or globe. Students will keep cards for next activity.
5. Outside Activity – Using “shower curtain/material” map, (If your school already has a pavement map of the world, this could be used instead) teacher will spread map outside on whatever flat surface is available. Have students form circle around outside boundary of map holding their signs. Teacher will direct students to locate themselves on the map by calling out continent and ocean names. Once students are properly located on map, have students sing Continents and Oceans Song again as they hold up the sign for their “spot.”
6. After conclusion of activity, teacher will call on specific students, asking whether they are a continent or an ocean. Students answering correctly are directed to form a line to go inside. Collect signs and go inside.

DAY TWO

1. As an opener to lesson, have students stand and quickly review Continents and Oceans Song.
2. Have students come to sit by teacher for reading book about ocean. Teacher reads *The Earth is Mostly Ocean*, by Allan Fowler, stressing pp. 5,7, & 11, as these ideas will be journaled later on World Map Journaling Page (Appendix A or Student Ocean Booklet).
3. Students will return to seat. Hand out student copies of World Map Journaling Page (Appendix A) (or Student Ocean Booklet). Using transparency of World Map Journaling Page, teacher will have students identify on overhead one at a time, where the specific continents and oceans are located. Students label their own maps during process. After map is labeled, teacher will dictate onto overhead the following: “There are four oceans on our Earth. They are the Pacific Ocean, the Atlantic Ocean, the Indian Ocean, and the Arctic Ocean.” Students will copy this onto bottom portion of World Map Journaling Page as teacher writes onto overhead, leaving room to add two more sentences in the next lesson.
4. Students color continents green and oceans blue on map.

E. *Evaluation/Assessment*

1. Accurate completion of World Map Journaling Page

Lesson Two: Ocean Water is Salty

NOTE – PRIOR PREPARATION NECESSARY FOR LESSON

A. *Daily Objectives*

1. Concept Objectives
 - a. Students understand that matter has characteristic properties.
2. Lesson Content
 - a. Water covers most of the Earth.
 - b. Ocean water is salty unlike freshwater rivers and lakes.
3. Skill Objectives
 - a. Students will create mixtures and separate them based on differences in properties.
 - b. Students will record process used during observation.

B. *Materials*

1. *A New True Book: Oceans*, by Katharine Jones Carter
2. World Map Journaling Page and transparency of it from Lesson 1
3. Two Small Corning Ware Visions Cookware Pots (metal pots can be used)
4. Measuring spoon, salt, distilled water, sponge or paper towels
5. Two single burner hot plates
6. Teacher copy of Salt Water/Fresh Water Experiment (Appendix J)
7. Student copies of Observation Page (Appendix B (or Student Ocean Booklet)
8. Transparencies of Observation Page and The Ocean Song (Appendices B and K)

C. *Key Vocabulary*

1. Mineral – natural substances, including iron and salt that are formed in the ground
2. Evaporate – when a liquid changes into a gas because it has been heated

D. *Procedures/Activities*

1. Prior to beginning class, pre-mix ½ cup water and 1 Tablespoon salt, for saltwater solution used in experiment, out of sight of students to preserve wonder of learning.
2. Teacher will read *A New True Book: Oceans*, Carter, pages 5-19, emphasizing pages 5, 7, 8, and 9.
3. Using World Map Journaling Page and Transparency (from Lesson 1, Appendix A) teacher will review four oceans.
4. Students will write two more sentences to complete page. Teacher dictates onto overhead as follows: “Water covers most of the earth. Ocean water is salty.”
5. Teacher introduces Salt Water/Fresh Water experiment (directions included in Appendix J) by discussing differences between ocean water and water from lakes, rivers, and ponds.
6. Teacher prepares experiment as a demonstration for class. Be sure to pre-heat burner(s) for experiment at this time. While preparation takes place, using overhead, teach students The Ocean Song (Appendix K). Sing song throughout remainder of unit as desired so that students learn well.
7. Allow discussion time for student hypothesis. Using Student Observation Sheet (Appendix B or Student Ocean Booklet) and transparency have students copy information about observation on worksheet. Students will write as teacher dictates onto overhead:
“Observation: Fresh Water and Salt Water
What will we do: When we evaporate fresh water, nothing will be left.
When we evaporate salt water, the salt will remain.”
8. Perform experiment (using Appendix J). Estimated time lapse – 5 minutes.
9. Students and teacher will discuss what took place. Teacher will journal ideas on board as students narrate back. Together, students and teachers will generate a sentence(s) describing what they saw as the experiment was performed. Students will all copy sentence(s) onto Observation Sheet (Appendix B).

10. Students will write their own sentence in “We Learned” section to summarize activity.
 11. Instruct students to put books or papers away and sing together The Ocean Song one more time.
- E. *Evaluation/Assessment*
1. Student will give appropriate response to “We Learned” section of Observation Sheet. Appropriate responses would be similar to: “I learned that ocean water has salt in it and fresh water does not.”(Author’s disclaimer...it is not necessary for a first grader to know that fresh water does have certain mineral content! ☺)

Lesson Three: Coast, Shore, and Tides

A. *Daily Objectives*

1. Concept Objectives
 - a. Students will understand the composition of the Earth.
2. Lesson Content
 - a. A coast is the edge of the land touching the ocean.
 - b. A shore is the place where a body of water meets the land. Lakes and rivers have a shore. Ocean coasts are often called “the shore.”
 - c. Tides are the ocean moving, every day, toward or away from the land. When water moves toward the land it is called “high tide.” When water moves away from the land it is called “low tide.”
1. Skill Objectives
 - a. Students will identify components of Earth’s physical systems and their characteristics.
 - b. Students will locate coastlines on world map.
 - c. Students will record observations about coast/shore.

B. *Materials*

1. *A New True Book: Oceans*, by Katharine Jones Carter
2. *The Seashore: A First Discovery Book*, by Gallimard Jeunesse & Elisabeth Cohat
3. *Oceans*, by Neil Morris
4. *What Your First Grader Needs to Know*, by E.D. Hirsch, Jr.
5. Globe, several chart wall maps of world, pull-down map of world
6. Student Copies and transparency of Shore and Tide Journaling Page (Appendix C)

C. *Key Vocabulary*

1. Coast - the edge of the land touching the ocean
2. Shore - the place where a body of water meets the land. Lakes and rivers have a shore. Ocean coasts are often called “the shore.”
3. Waves - formed on the surface of the ocean when wind blows the water.
4. Tides - the ocean moving, every day, toward or away from the land; when water moves toward the land it is called high tide; when water moves away from the land it is called low tide

D. *Procedures/Activities*

DAY ONE – Coast

1. Teacher reads *Oceans*, by Neil Morris, pp. 14-15 about coastlines, emphasizing the fact that oceans carve the shapes of the world’s coastlines.
2. Using a globe, several chart wall maps, and a pull down wall map of the world, teacher will group students around various maps in the room. Teacher will instruct students to finger trace the coastlines of various continents to reinforce concept that a coast is where the ocean meets the land of the continents.
3. Students will return to their desks and using their World Map Journaling Page (Appendix A, from Lesson One) will trace, with a brown crayon or marker, the coastlines of all seven continents.

4. Teacher will visually assess for accuracy during outlining of coastlines.
5. While students are tracing, teacher will distribute the Shore & Tide Journaling Page (Appendix C).
6. Have students set aside World Map Page when finished.
7. Teacher will wrap-up information with brief oral review of coast and introduce the term shore for next lesson.
8. Teacher will dictate onto overhead first sentence for students to copy onto Shore & Tide Page as follows: "The place where the ocean meets the land is called the coast or shore."
9. Have students store or collect paperwork properly as desired.

DAY TWO – Shore & Tides

1. Teacher will read *What Your First Grader Needs To Know*, by E.D. Hirsch, Jr., p. 282, paragraphs one and two only, reviewing globe, map, and where the oceans are.
2. Have students take out World Map Journaling Page (Appendix A). Direct students to point to specific oceans as they are called out. Also have students once again, trace with their fingers around coastlines of specific continents for review.
3. Have students come to reading area.
4. Teacher will read *A New True Book: Oceans*, by Katharine Jones Carter, p. 26, tying the term shore to coast and discussing picture at top.
5. Teacher will then refer back to *What Your First Grader Needs to Know*, by E.D. Hirsch, Jr., p. 282 and read the rest of the page, showing the picture, and discussing how different the shore looks during high and low tide.
6. Teacher will then read *The Seashore: A First Discovery Book*, by Gallionard Jeunesse. Read only the first two pages, flipping the transparency to show difference between high and low tides.
7. Students will return to their desks and using their Shore & Tide Journaling Page (Appendix C), will copy as teacher dictates onto overhead the following: "Twice every day in a regular pattern the level of the ocean rises and falls as it meets the shore. These changes are called the oceans tides."
8. Teacher and students will discuss high and low tides talking about what was just learned from reading and journaling (see above).
9. In space provided at top of Journaling Page, students will create original drawings of their interpretation of what high and low tide looks like.

E. *Evaluation/Assessment*

1. Teacher will visually assess for accuracy during outlining of coastlines.
2. Teacher will visually assess student understanding of high and low tides from original drawings.

Lesson Four: Ocean Currents – The Gulf Stream

A. *Daily Objectives*

1. Lesson Content
 - a. Waves are formed on the surface of the ocean when wind blows the water.
 - b. The water in the ocean moves all the time because of the wind and tides.
 - c. In some parts of the ocean, the water moves in great streams called ocean currents. One of these currents is called the Gulf Stream.
2. Concept Objectives
 - a. Students will understand that matter has characteristic properties.
3. Skill Objectives
 - a. Students will identify components of Earth's physical systems and their characteristics.
 - b. Students will locate and label the Gulf Stream on a world map.
 - c. Students will record information about the Gulf Stream.

- d. Students will ask reasonable questions based on observation, state simple hypotheses, and predict results of an observation.

B. *Materials*

DAY ONE

1. *A New True Book: Oceans*, by Katharine Jones Carter, pp. 27-32
2. Student Copies of Gulf Stream Journaling Page (Appendix D)
3. Transparency of Gulf Stream Journaling Page (Appendix D)
4. "Sound Off" Sentence Strips (Appendix L)

DAY TWO

1. Water Currents Activity Supplies (see Appendix M)
2. Water Current Observation Page (Appendix E)
3. Transparency of Water Current Observation Page (Appendix E)

C. *Key Vocabulary*

1. Wave – formed on surface of ocean when wind blows water
2. Current – the movement of water
3. Gulf Stream – an ocean current in the Atlantic Ocean

D. *Procedures/Activities*

DAY ONE – Currents: The Gulf Stream

1. Review – go around room and have individual children say one thing that they have learned so far about oceans.
2. Teacher will read *A New True Book: Oceans*, by Katharine Jones Carter, pp. 27-32, showing pictures, reviewing tides, introducing vocabulary word waves, and introducing currents, specifically The Gulf Stream.
3. Teacher will hand out Gulf Stream Journaling Page (Appendix D). Have students locate the Atlantic Ocean on map at top of page. Discuss briefly that this is where you just read that the Gulf Stream is located.
4. Using pencil, students will draw the Gulf Stream onto their map following teacher direction on overhead, and label it.
5. Students will then copy as teacher dictates onto overhead the following: "The water in the ocean moves all the time because of the wind and tides. In some parts of the ocean, the water moves in great streams called ocean currents. One of these currents is called the Gulf Stream."
6. Have students put away journaling page as desired.
7. SOUND OFF – Teacher will hand out individual sound off sentences (Appendix L) while students are putting journal pages away. Sheets are numbered. Beginning with number one, students will stand and "sound off" by reading what is on their sound off sentence strips as review to close.

DAY TWO – Currents – Activity

NOTE – PRIOR PREPARATION NECESSARY FOR LESSON!

1. Teacher will read *What Your First Grader Needs to Know*, by E.D. Hirsch, Jr., p. 283-284 (top), "Ocean Currents" and orally review currents and Gulf Stream.
2. While discussing reading and reviewing material from Day One, teacher will set up materials for Water Currents Activity (Appendix M).
3. Using Water Currents Observation Page (Appendix E), students will copy onto page as dictated onto overhead by teacher the following: "Observation: Water Currents." Before completing "What do we think will happen?" section, teacher will generate discussion from students by presenting three different possible outcomes of activity. Teacher will write question on board: "What do we think will happen when the warm and cold water meet?" Possible answers would be:
 - a. The colored water from the ice cubes will move toward the other side of the pan.
 - b. The colored water from the ice cubes will float on the surface.

- c. The colored water from the ice cubes will mix in with the rest of the water right away.
Students will enter their answer onto observation page after “What do we think will happen?”
 4. Teacher will then demonstrate how water currents move in the ocean by performing Water Currents Activity (Appendix M).
 5. After discussion about what was observed in Activity, using Water Current Observation Page (Appendix E). Students will copy after section “What did we see?”: “The colored water moved toward the other end of the pan.”
 6. Using Water Current Journaling Page (Appendix F), students will copy as dictated by teacher onto overhead the following: “The colored water moved toward the other end of the pan. This is like the Gulf Stream moving through the Atlantic Ocean.”
 7. Students will then draw a picture on top of journaling sheet illustrating activity they observed.
- E. *Evaluation/Assessment*
1. Accuracy of student drawings of currents and sentences

Lesson Five: The Ocean Floor

- A. *Daily Objectives*
1. Concept Objectives
 - a. Students understand the composition of the Earth.
 2. Lesson Content
 - a. The ocean floor has hills, mountains, and valleys just like the dry parts of the earth.
 - b. The deep valleys are called ocean trenches.
 3. Skill Objectives
 - a. Students will label major features of the ocean floor.
 - b. Students will record information obtained from reading and discussion about ocean floor.
 - c. Students will state predictions and use data based on observations about what ocean floor looks like.
- B. *Materials*
- DAY ONE
1. *What Your First Grader Needs to Know*, by E.D. Hirsch, Jr., p. 284.
 2. Several books of your choice showing diagrams of ocean floor (see Resources and Bibliography).
 3. Ocean Floor Journaling Page (Appendix G) and key or Student Ocean Booklet
- DAY TWO
1. Ocean Floor Model How-to Page (Appendix N)
 2. Materials to create Ocean Floor Models (see Appendix N)
 3. Student Ocean Booklets (if made and used)
- DAY THREE
1. “Sound Off” Sentence Strips (Appendix L)
 2. Student copies and key of Final Ocean Test (Appendix O)
- C. *Key Vocabulary*
1. Trench – a V-shaped valley under the ocean
 2. Valley – low land lying between hills or mountains
 3. Mountain- a high hill with steep slopes
 4. Hill- a raised area of land, not as high as a mountain

D. *Procedures/Activities*

DAY ONE

1. Review – Orally discuss all facts about ocean. Teacher will state that everything we have studied thus far is what we can SEE, and we started going below the ocean when we talked about currents. Now we are going to go even further below and talk about the floor of the ocean.
2. Ask students “What do you think the floor of the ocean looks like?”
3. Write several responses on board and save for end of lesson to compare “What we thought” to “What we have learned.”
4. Teacher reads *What Your First Grader Needs to Know*, by E.D. Hirsch, Jr., p. 284, paragraphs 1-2.
5. Teacher will show students several examples of diagrams of the ocean floor (see resources and bibliography) pointing out trenches, hills, mountains, and valleys.
6. Students will now discuss again, stating what they now know an ocean floor looks like as teacher records on board to compare and contrast with previous list of predictions about the ocean floor.
7. Using Ocean Floor Journaling Page (Appendix G) or Student Ocean Booklets, teacher will dictate onto overhead the following terms for student to label on diagram at top: mountain, hill, valley, trench.
8. Student will then copy following teacher dictation on overhead the following: “The ocean floor has hills, mountains and valleys like the dry parts of the earth. The deep valleys are called trenches.

DAY TWO

1. Review features of ocean floor orally.
2. Students will create ocean floor models. (Appendix N) Collect and allow to dry for tomorrow.
3. If you have created booklets, students will, as they finish, take out Ocean Booklets and read through, completing any pages they need to finish coloring, etc. before turning in for grade.

DAY THREE

1. SOUND OFF – Prepare for sound off.
2. Have students do sound off. Put sound off papers in take home folder or collect for future use.
3. Give Final Written Ocean Test (Appendix O) and collect to grade.

E. *Evaluation/Assessment*

1. Proper completion of Ocean Booklets and design of Ocean Floor Model.
2. Final written test

VI. CULMINATING ACTIVITY

- A. Students will take ocean floor models outside. Pour water into containers allowing students to observe ocean floor characteristics through the water. Discuss and review orally what the ocean floor looks like under water. Pour water out. Return to classroom and put models in area to take home.
- B. Sing The Ocean Song (Appendix K) one more time!

VII. HANDOUTS/WORKSHEETS

Appendices A through O [Note: Appendix H distributed at session only]

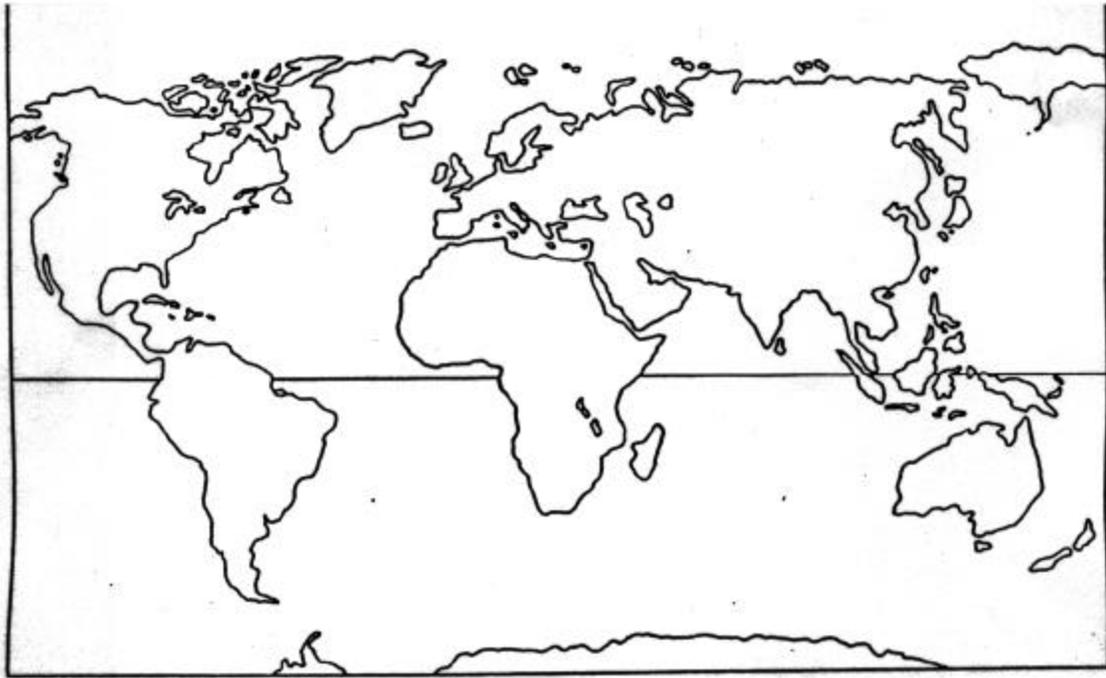
VIII. BIBLIOGRAPHY

- A. Carter, Katharine Jones. *A New True Book: Oceans*. Chicago: Regensteiner Publishing Enterprises, Inc., 1982. ISBN 0-516-01639-3 (formerly published by Children’s Press)

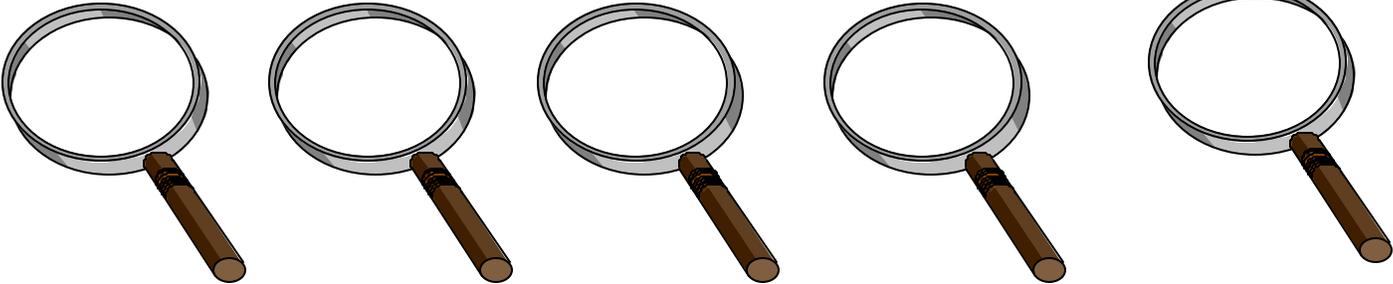
- B. Cole, Joanna. *The Magic School Bus: On the Ocean Floor*. New York: Scholastic, Inc., 1992. ISBN 0-590-41431-3
- C. Fowler, Allan. *The Earth is Mostly Ocean*. Rookie Read-About Science. Chicago: Children's Press, Inc., 1995. ISBN 0-516-46038-2
- D. Haslam, Andrew and Barbara Taylor. *Make it Work: Oceans*. New York: Scholastic, Inc., 1997. ISBN 0-439-18024-4 (alternate publisher Two-Can Publishing, Ltd.
- E. Hirsch, Jr., E.D. *What Your First Grader Need to Know: Fundamentals of a Good First Grade Education. (Revised Edition)*. New York, New York: Doubleday, 1997, ISBN 0-385-48119-5
- F. Jeunesse, Gallimard and Elisabeth Cohat. *The Seashore: A First Discovery Book*. New York: Scholastic, Inc., 1995. ISBN 0-590-20303-7
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- H. Moore, JoEllen. *Habitats: Science Works for Kids Series*. Monterey, CA: Evan Moor, 1998. ISBN 1-55799-688-1 (Cat. # EMC 859)
- I. Morris, Neil. *Oceans: The Wonders of Our World*. Crabtree Publishing, 1996. ISBN 0-86505-828-8
- J. National Wildlife Federation. *Ranger Rick's Nature Scope: Diving into Oceans*. Vol. 4, number 2. New York: McGraw-Hill, 1998. ISBN 0-07-047097-9
- K. Ortleb, Edward. *Primary Science Resource Guide: Life in the Ocean*. St. Louis, MO: Milliken Publishing Co., 1997. ISBN 0-7877-0305-2. (Cat. # MP4797)
- L. VanCleave, Janice. *Oceans for Every Kid: Easy Activities that Make Learning Science Fun*. New York: John Wiley & Sons, Inc., 1996. ISBN 0-471-2453-2

Please note: Background Notes for each individual lesson in the preceding pages have been omitted to conserve space. If you would like a copy of the authors original Background Notes, please feel free to contact us via e-mail at whhyndman@juno.com or via the following address. Wendy Hyndman, The Classical Academy, 8650 Scarborough Drive, Colorado Springs, CO 80920. Also note that the following appendices have been reduced to a smaller font size to conserve space as well. Feel free to re-type any or all of these to suit your needs and to make them more conducive to student use.

Appendix A



Appendix B – Water, Water Everywhere and Nary a Drop to Drink!



Fresh Water or Salt Water?
Observation Page

Observation: _____

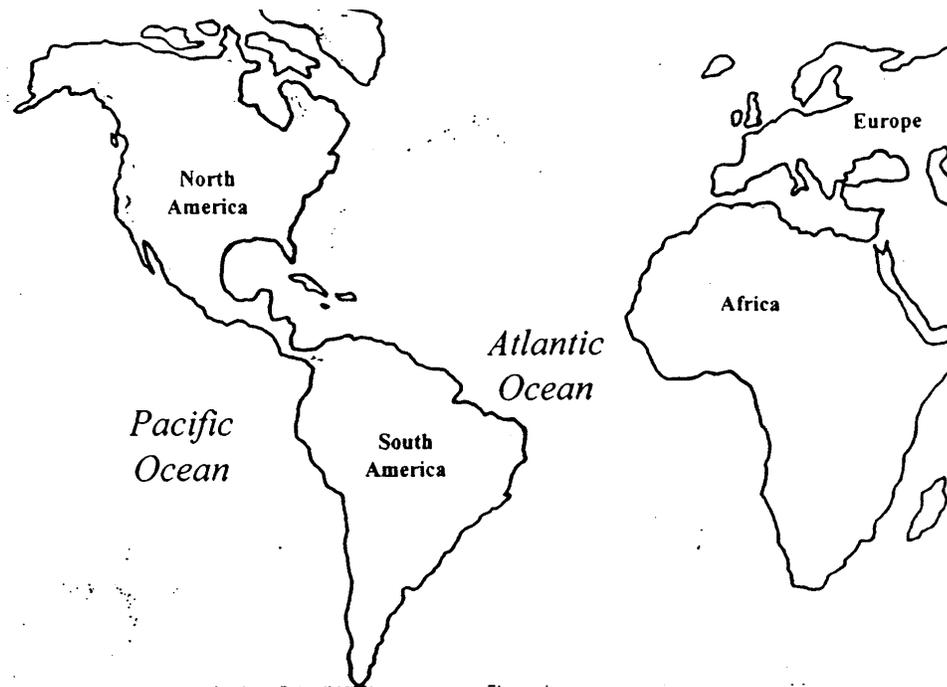
What will we do? _____

What we observed: _____

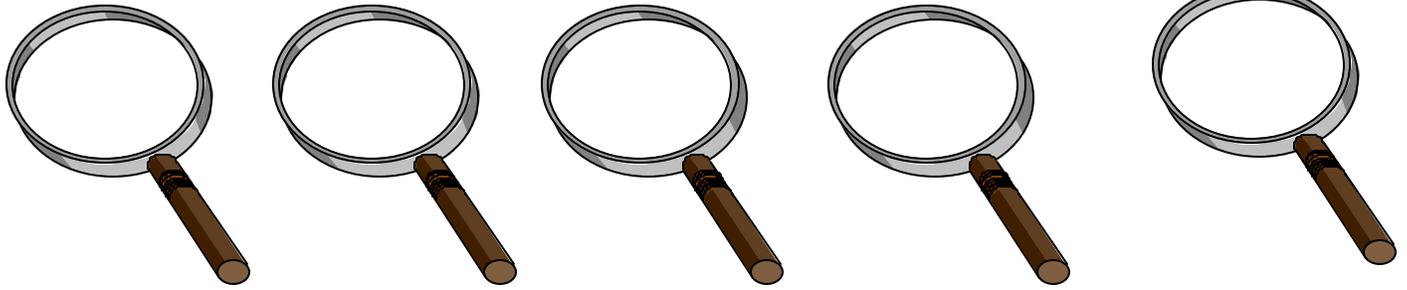
We learned _____

Shore & Tide Journaling Page

Appendix D



Appendix E- Water, Water Everywhere and Nary a Drop to Drink!



Water Current Observation Page

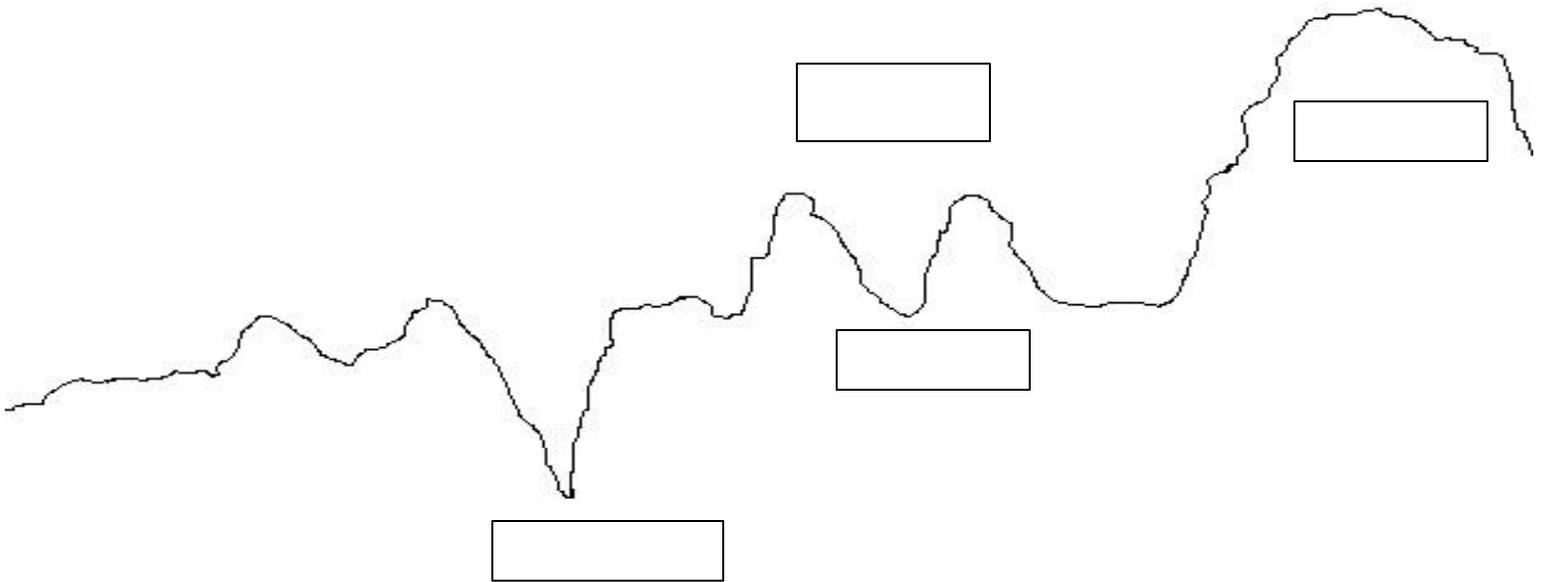
Observation: _____

What do we think will happen? _____

What did we see? _____

We learned _____

Ocean Floor Journaling Page



Shower Curtain/Fabric Map

1. Make an overhead transparency of a world map.
2. Using large flat piece of solid material (shower curtain size or larger) or a shower curtain, hang fabric or curtain on smooth wall surface (the larger the better!)
3. Project image of map, using overhead projector, onto fabric (curtain) and trace with a permanent marker.

Appendix J- Water, Water Everywhere and Nary a Drop to Drink!

Salt Water vs. Fresh Water Experiment

Materials:

- Salt
- Distilled water
- Tablespoon measuring spoon
- ½ cup measuring cup
- Two covered containers to mix and store water
- Two small clear cooktop safe containers (Corning Ware Visions Cookware) or metal containers if necessary
- Two single or one large hot plate burner
- Sponge or paper toweling (to clean up any spills)
- Four pot holders

Prepare ahead of time out of sight of students:

1. Measure ½ cup distilled water into each covered container.
2. Add one tablespoon salt to one of the covered containers of water.
3. Mix well to dissolve salt completely.
4. Set aside until time to perform experiment.

Procedure for experiment:

1. Preheat burner(s)
2. Bring prepared materials to demonstration area.
3. Be sure that saltwater mixture is still mixed and salt has not settled out. If it has, remix.
4. Pour prepared water samples into separate heat safe containers (pots).
5. Place water filled containers on burners.
6. Allow discussion time for student hypothesis. Using Student Observation Sheet (Appendix B)(or Student Ocean Booklet) and transparency have students copy information about observation on worksheet. Students will write as teacher dictates onto overhead:
"Observation: Fresh Water and Salt Water
What will we do: When we evaporate fresh water, nothing will be left. When we evaporate salt water, the salt will remain."
7. Water will take approximately 5 minutes, depending upon altitude and heat source, to evaporate. Use caution with students while this process is occurring. USE CAUTION: Pans will be VERY HOT when removing from heat source as you have boiled them "dry". DO NOT ALLOW students to assist with this process. Using potholders, remove pans from burners and allow to cool on separate pot holders, out of reach of children.
8. Clean up supplies as necessary.

The Ocean Song

(Sing to the tune of “My Bonnie Lies over the Ocean.”)

The Earth is all covered with ocean.
The Earth is all covered with sea.
The Earth is all covered with ocean.
More water than land, don’t you see?

Chorus:

Water, water, there’s water all over the earth, the earth.
Water, water, there’s water all over the earth.

So salty and cold is the ocean.
So salty and cold is the sea.
So salty and cold is the ocean.
Too cold and too salty for me.

Repeat chorus

Atlantic, Pacific, the Arctic,
And then there’s the Indian too.
These oceans all cover our planet.
I named all of them, now can you?

Repeat chorus

Sound Off Sentence Strips

1. A continent is one of the seven main bodies of land on the Earth.
2. Most of the Earth is covered by water.
3. This water is called the ocean.
4. An ocean is a large body of saltwater.
5. Ponds are made of fresh water.
6. A coast is the edge of the land that touches the ocean.
7. A shore is the place where a body of water meets the land.
8. Waves are formed on the surface of the ocean when wind blows on the water.
9. Tides are the ocean moving, every day, toward and away from the land.
10. We call when the water level drops and the edge of the water moves farther away low tide.
11. We call when the water level drops and the edge of the water moves farther away low tide.
12. In some parts of the ocean, water moves in great streams called ocean currents.
13. An ocean current in the Atlantic Ocean is called the Gulf Stream.
14. An ocean trench is a deep, v-shaped valley under the ocean.
15. A valley is low land which lies between hills or mountains.
16. A hill is a raised area of the Earth's surface, not as high as a mountain.
17. A mountain is a high hill with steep slopes.
18. The bottom of the ocean is called the ocean floor.
19. The ocean has hills, mountains and trenches.

Water Currents Activity

Materials:

- Clear, shallow oblong container
- Saltwater solution (1 tablespoon salt per 1 qt. Water = same proportion of salt as found in seawater)
- Ice cube tray
- Food coloring (blue preferred)
- Lukewarm water from sink
- Freezer

Procedures:

AHEAD OF TIME:

1. Add 5 or more drops of food coloring to the saltwater solution and stir well.
2. Partially fill ice cube tray with colored saltwater solution and freeze. You will need 4 or more ice cubes for experiment.

AT TIME OF EXPERIMENT:

1. Fill clear container with lukewarm water.
2. Place enough colored ice cubes into water in container to line the width of one end of the container. Using a ruler or your fingers, keep the ice cubes in place at the one end of the container.
3. Observe from lengthwise side of container to see what happens to the ice cubes as they melt.

Ocean Floor Model How-To Page

Materials:

- Modeling clay
- Small clear container for each child (Ziploc storage type preferred)
- Water (add salt to water if desired)

Procedures:

1. Students will use modeling clay to form mountains, hills, valleys, and trenches to fit into bottom of container. Be certain that mountains rise to about three-fourths the height of the container.
2. Fill containers with water making sure that top part of mountain is out of the water.

Science Assessment: The Ocean

1. Ponds are made of
 - fresh water
 - dry land
 - salt water
2. Oceans are made of
 - fresh water
 - dry land
 - salt water
3. In some parts of the ocean, water moves in great streams called
 - the great white whale
 - ocean currents
 - icebergs
4. An ocean current in the Atlantic Ocean is called the
 - Gulf Stream
 - Mississippi River
 - Lake Placid
5. The place where the ocean meets the land is called the
 - waves
 - tides
 - shore
6. Twice every day the level of the ocean rises and falls as it meets the shore. These changes are called
 - evolution
 - tides
 - nothing
7. We call when the edge of the water comes way up
 - high tide
 - low tide
 - medium tide
8. We call when the water level drops and the edge of the water moves farther away
 - high tide
 - low tide
 - medium tide
9. The bottom of the ocean is called the
 - ocean floor
 - desert
 - grasslands
10. The ocean has hills, mountains, and trenches.
 - Yes
 - No