

## Leapfrog Program

### Course Title: Underwater Adventure

### Course Description

Do fish sleep? Do whales talk? Students investigate the unique characteristics and lives of aquatic animals. Through model making, readings and research activities students are introduced to many different kinds of underwater animals and learn about biodiversity, interdependence and life cycles.

### Essential Questions

How are these creatures different from animals we see every day?  
How are creatures that live in the sea different from creatures that live on land?  
How does an underwater habitat affect how living things move, eat, and behave?  
What methods do scientists use to study underwater creatures?

### Outcomes

Upon successful completion of this course, students will have:

- Defined *creature, animal, mammal, fish*
- Researched and discussed creatures that live in the sea
- Compared and contrasted things that live underwater and things that live on land
- Conducted experiments and created models that demonstrate how living things move, eat, and behave in water
- Researched and practiced techniques scientists use to study life underwater
- Analyzed how changes in an underwater habitat affect the organisms that live there.
- Recorded data, facts, and ideas about underwater life through writing, dictation, drawing, and creating charts and tables
- Created a final project about underwater creatures that demonstrates understanding about characteristics of sea animals

### Instructional Strategies

Throughout Underwater Adventure, students will be instructed using a variety of strategies. From the beginning, students will enter a comfortable classroom environment where they are encouraged to take risks, and lessons are differentiated to meet their individualized needs. Beginning most days with a large group discussion or activity, students will begin to feel at ease with one another, and therefore have many opportunities for socialization.

Small groups will be used as well, to provide Instructors and Teaching Assistants with the opportunity to assess more effectively. In these small groups students will be provided with tiered assignments, and experiments will focus around their ability to converse and make predictions. Using multiple teaching strategies will allow all students to feel full participation in a variety of outlets.

### Resources and Materials

- **Books**
  - Berger, Melvin and Gilda, *Fish Sleep but Don't Shut Their Eyes: and other amazing facts about ocean creatures*, 2004, 0439625335.
  - Berkes, Marianne, *Over in the Ocean: in a coral reef*, 2004, 1584690631.
  - Burns, Loree Griffin, *Tracking Trash: flotsam, jetsam, and the science of ocean motion*, 2007, 9780618581313.

- d. Cole, Joanna, *The Magic School Bus on the Ocean Floor*, 1992, 0590414305.
- e. Earle, Sylvia, *Hello Fish, visiting the coral reef*, 1999, 0792271033.
- f. Kita, Suzanne, *Three Whales Who Won the Heart of the World*, 1996, 0896102882.
- g. Littlefield, Cindy A., *Awesome Ocean Science! Investigating the Secrets of the Underwater World*, 2003, 1885593716.
- h. Pfister, Marcus, *The Rainbow Fish*, 1992, 1558580093.
- i. Relf, Patricia, *The Magic School Bus Gets Eaten*, 1996, 0590484141.
- j. Sacks, Janet, *Oceans and Art Activities*, 2002, 0778711439.
- k. Scholastic Reference, *Scholastic Atlas of Oceans*, 2004, 0439561280.
- l. Simon, Seymour, *Oceans*, 1990, 0688094538.
- m. Simon, Seymour, *Whales*, 1989, 0690047568.
- n. Time Life For Children, *About The Sea*, 1989, 0809474751.
- o. White, Nancy, *The Magic School Bus Takes a Dive*, 1998, 0590187236.
- **Web sites**
  - a. Building Beaches, [http://www.sciencebuddies.org/science-fair-projects/project\\_ideas/OceanSci\\_p011.shtml?fave=no&isb=cmlkOjk5MjI2MjIsc2lkOjAscDoxLGIhOk9jZWFuU2Np&from=TSW](http://www.sciencebuddies.org/science-fair-projects/project_ideas/OceanSci_p011.shtml?fave=no&isb=cmlkOjk5MjI2MjIsc2lkOjAscDoxLGIhOk9jZWFuU2Np&from=TSW) Using the experiment on this website to help teach children about tides and tide pools
- **Other Media**
  - a. Replace this text with information about media type, title, publisher and other relevant information. Use the return key to add a bullet point for additional entries.
- **Materials**
  - a. Notebook
  - b. Crayons, Markers, or Colored Pencils (whatever you prefer)
  - c. Scissors
  - d. Elmer's White Glue
  - e. Glue Stick

## Student Assessment

- **Pre-Assessment**
  - Students will be asked to create their own (small) Ocean Mural on the first day of class. Encouraging students to include animals, plants, objects seen underwater will allow instructors to gauge prior knowledge.
  - Whole class discussion focused on comparing/contrasting life on land to life underwater. We will create a venn diagram to show the similarities and differences between both. This venn diagram will then be used throughout the week as an assessment tool.
- **Documentation of Learning**
  - Venn Diagrams will be used to strengthen and observe students comparative skills.
  - Predictions and Hypotheses will be used to help students make educated guesses and practice using skills of the Scientific Process.
  - Documentation during Large and Small Group Discussion to observe student participation and ability to verbalize and defend his or her thinking.
  - Photo Documentation and Dictated Writing will show how students interact and think about topics.
- **Post-Assessment**
  - The last two days of class students will use the topics we have discussed and experimented with by creating their own class Ocean Mural. Using the ideas of the food chain, ecosystem, and environmental aspects, students will place animals where they belong, keeping them near or away from predators and prey.

During the EXPO, students will be responsible for showing our guests how to use the experiments we have been conducting throughout the week. At the end of the course students will receive a written evaluation

based on general class performance, discussion, participation (whole group and small group) evaluations, and written work. Final Student evaluations are written are mailed out by September 15. Please refer to the Leapfrog Family handbook for more information.

## Schedule

Date	Topic(s)	In-class Activities	How will you document learning for assessment?
7/11 Monday	<ul style="list-style-type: none"> <li>• Pre-Assessment</li> <li>• Fresh Water vs. Salt Water</li> <li>• Creatures, Animals, Mammals, Fish</li> </ul>	<ul style="list-style-type: none"> <li>• Ocean Mural</li> <li>• Venn Diagram: Land life vs. Underwater Life</li> <li>• Water Experiment with Foil Boats</li> <li>• Definitions</li> </ul>	<ul style="list-style-type: none"> <li>• Dictation during Ocean Mural</li> <li>• Venn Diagram</li> <li>• Photo Documentation</li> <li>• Students will make predictions about which boat will float with more weight.</li> <li>• Students will help create definitions for fish, mammals, animals, creatures in small groups using picture cues.</li> <li>• Photo Documentation</li> </ul>
7/12 Tuesday	<ul style="list-style-type: none"> <li>• Large Creatures</li> </ul>	<ul style="list-style-type: none"> <li>• Create a list of large sea creatures</li> <li>• Shark Scent Experiment</li> <li>• Whale/Dolphin Blubber Experiment</li> <li>• Whale Baleen Activity</li> <li>• Octopus Game using flour balloons and dolphin communication techniques to find hidden octopuses.</li> </ul>	<ul style="list-style-type: none"> <li>• Student Participation</li> <li>• Photo Documentation</li> <li>• Observing Predictions and Hypotheses</li> </ul>
7/13 Wednesday	<ul style="list-style-type: none"> <li>• Small Creatures</li> </ul>	<ul style="list-style-type: none"> <li>• List of Small Ocean Animals</li> <li>• Tide and Tide Pool Experiments</li> <li>• Food Chain</li> <li>• Coral Reef</li> </ul>	<ul style="list-style-type: none"> <li>• Student Participation</li> <li>• Photo Documentation</li> <li>• Making Predictions/Hypotheses</li> <li>• Creating our own Food Chain</li> </ul>
7/14 Thursday	<ul style="list-style-type: none"> <li>• Environmental Effects</li> <li>• Oil Spill</li> <li>• Ocean Mural</li> </ul>	<ul style="list-style-type: none"> <li>• Items effecting the ocean ecosystem</li> <li>• How an oil spill can affect underwater plants and animals. How do we clean it up?</li> <li>• Begin working on Ocean Mural</li> </ul>	<ul style="list-style-type: none"> <li>• Ideas for cleaning up an oil spill</li> <li>• Students will use the items we've talked about all week to create ocean murals</li> </ul>
7/15 Friday	<ul style="list-style-type: none"> <li>• Ocean Mural</li> <li>• EXPO</li> </ul>	<ul style="list-style-type: none"> <li>• Finish working on Ocean Mural</li> <li>• Students help set up experiments and practice leading them for EXPO</li> <li>• EXPO</li> </ul>	<ul style="list-style-type: none"> <li>• Student participation during Ocean Mural</li> <li>• Watch how students lead experiments during EXPO</li> </ul>

**CTD Statement on Third-Party Web Sites**

Instructors are required to thoroughly review any third-party web sites they intend to use in their courses for inappropriate content. However, because web content continuously changes, CTD disclaims any responsibility for any of the content contained on third-party web sites used in course materials. If you become aware of anything that may be inappropriate, please notify CTD staff immediately.

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