

# **Systems and Interactions/ Interdependence/ Patterns and Structure Grade 6**

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In order to cover all necessary curriculum guidelines, my intent is to integrate the marine science theme into the existing curriculum. The major purpose of the 6th grade curriculum is to provide students with science concepts and ideas that build upon the student's K-5 experience. This plan is to help students gain the knowledge and skills necessary for leading a successful and productive life in a technological society and to give them the foundation for secondary level science studies that will enable them to become scientifically literate citizens. The goal is to strive to show students the connections between the various disciplines of biology, chemistry, earth science, physics, and health, with a focus on earth science. (Guidelines for Instruction - LAUSD)

## **Science Concepts:**

LAUSD District Standards:

#19 Explore and analyze how the physical features of the earth determine habitats and climate; explore and analyze common earth science concepts such as the water cycle, gravity, and earth's rotation and tilt: explain the benefit of wisely using and protecting the earth's resources. # 22 Explain how organisms survive, grow, and reproduce; classify them according to their characteristics, including cellular structure and analyze their interactions with the environment and other living organisms.

# 23 Identify relevant evidence, reason logically, and create scientific questions.

#24 Communicate predications and conclusions about the natural and physical world orally, visually and in writing from individual and group observations, research, and investigations.

#25 Work independently and in groups to investigate scientific questions.

#26 Use available scientific equipment effectively, such as thermometers, microscopes, and computers (including the Internet) to gather and share data about natural objects, organisms, and events.

#27 Identify and research science concepts involved in real-world problems, establish important connections among the disciplines of biology, earth/space science, and physics.

## **California Science Content Standards - Grade 6**

### **Plate Tectonics and Earth's Structure**

1. Plate tectonics explains important features of the Earth's surface and major geologic events.

### **Heat (Thermal Energy) (Physical Science)**

3. Heat moves in a predictable flow from warmer objects to cooler objects until all objects are at the same temperature.

### **Energy in the Earth System**

4. Many phenomena on the Earth's surface are affected by the transfer of energy through radiation and convection currents.

### **Ecology (Life Science)**

5. Organisms in ecosystems exchange energy and nutrients among themselves and with the environment.

### **Investigation and Experimentation**

7. Scientific progress is made by asking meaningful questions and conducting careful investigations.

## 1. Introduction to Earth and its Oceans

### A. **Activities**

- a. Reunite Pangea - For Sea: Unit 2 The Changing Shape of the Basins
- b. Slice of Ocean - Stacy Sinclair
- c. Packages - For Sea: Unit 2 The Changing Shape of the Basins
- d. Charting the Ocean Depths- AIMS Educational Foundation

### B. **Assessment**

- a. Culminating Task - World's Smallest Ocean (For Sea Unit 2)
- b. Culminating Task- Timeline of Fossil Evidence (Stacy Sinclair)
- c. Written test

### C. **Integration w#h other subjects**

- a. Language Arts - Writing journals
- b. Social Studies - Geography unit/Timeline conceptualization
- c. Mathematics - Measurement/Logic/Prot:)lem solving

## 2. Landforms

### A. **Activities**

- a. Schoolyard Models- FOSS Kit
- o. Stream Tables- FOSS Kit
- c. Go with the Flow - FOSS Kit
- d. Build a Mountain - FOSS Kit
- e. Bird's Eye View- FOSS Kit

## **B. Assessment**

- d. Hands-on Assessment- Furnace Creek Map (Foss Kit)
- e. Hands-on Assessment- Bright Angel Map (Foss Kit)
- f. Pictorial Assessment - Stream Tables (Foss Kit)
- g. Pictorial Assessment - Stream Tables Record Sheet (Foss Kit)
- h. Pictorial Assessment - Foss Lake Topographic Map (Foss Kit)
- i. Reflective Questions Assessment (Foss Kit)

## **C. Integration *with* other subjects**

- a. Mathematics- Proportional Drawings/Mapping with Grids/Large numbers
- b. Language Arts - Landform Expressions/Stream Haiku/Writing a Letter for More Maps/Designing a National Park Tour Package

## **3. The Ocean Planet - The Importance of Water**

### **A. Activities/Demos**

- a. Water. Water Everywhere (For Sea: Unit 3 The Salt Water Environment)
- b Super Cylinders ( Demonstration)
- c. Incredible Edible Mickey Mouse Water Molecule (Sandra Mast)
- d. Sticky Molecule (NSTA, Pg.25)
- e. Properties of H<sub>2</sub>O - Solubility (Fluid Earth)
- f. Water, the Universal Solvent (NSTA, Pg.49)
- g. Layering of Water
- h. Hydrometer of Unknowns

- i. Density, Temperature & Salinity (Fluid Earth)
- j. Heat Density
- k. Water to the Boil
- . Eggbert (Demonstration)
- m. Pile of Water (NSTA, Pg. 15)
- n. Vortex or Not
- o. Water Cycle - Mobius Strip (Stephanie Zierhut)
- p. Fresh from Salt (Living in Water- Activity 10)

## B. **Assessments**

- a. Lab packets of all labs with written reflections on each
- b. Written tests
- c. Culminating Task - The Great Salinity Contest (Living in Water- Act. 9)

## 4. **Living All Together**

### A. **Activities/Demos**

- a. The Human Knot (Demonstration)
- b. To Each its Home (Living in Water- Activity 29)
- c. Competing for Food (Living in Water- Activity 42)
- d. Eating and Being Eaten (Living in Eater- Activity 43)
- e. Who's for Dinner? (For Sea: Unit 4 - Grade 3)
- f. Where the food is: Plankton (For Sea: Unit 4 - Grade 8)
- 9. A Web of Life (Sea Searcher's Handbook. pg. 54)
- h. Squid Science Become Squid Art (Stacy Sinclair- GLATSA presentation)

### B. **Assessments**

- a. Lab packets of all labs with reflections of each.
- b. Written tests
- c. Presentation by student groups- Aquatic Science Symposium (Living in Water- Activity 50)

In hopes to create some cohesion in our disjointed existing science program at Carnegie Middle School, Chrystal Maggiore and myself are trying to provide an integrated marine science based curriculum in 6th and 8th grade. Our hopes are that in future years, we will have spread the SSWIMS program throughout our school so that our program is 6th, 7th and 8th. We have many motivated/young teachers searching for some guidance, and hopefully with the training that SSWIMS has provided us with, we will be able to disseminate the information not only in our school, but cluster-wide.

Our school population is predominantly Hispanic (40%), Filipino (30%), Pacific Islander (10%), African American (10%), and other (10%) The students I will be impacting are the GATE students (Gifted and Talented) and Sheltered students (Limited English Proficient). The SSWIMS program will challenge the high achievers and for the sheltered students it will provide them with the hands-on experience which is needed for the understanding of the basic concepts.