P1.10 TEACHING OCEANOGRAPHY IN A K-6 CLASSROOM

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1. INTRODUCTION

The scope of most elementary science curriculums stress land related topics and give less emphasis to oceanography. Although food chains, tides and biological issues are usually introduced, physical aspects of the oceans are rarely presented despite the fact that 70.8% of the world is covered with ocean; 1 of every 6 jobs in the U.S. are marine related; and news reports can be linked daily to the impact of oceans on our lives.

Lack of teacher training in oceanography may be partially responsible for this situation. Two programs: NOAA's Teacher at Sea and the AMS Maury Project, provide graduate education for teachers that will help them bring the economical, meteorological, and environmental importance of our seas enthusiastically to students of all levels.

Practical applications gleaned from these two experiences will be shared at this poster session. An overview of teaching modules, classroom lessons and computer visuals will demonstrate how literature, science, mathematics, history and technology can be integrated into raising student awareness of the role oceans play in our lives and the well being of our environment.

2. NOAA TEACHER AT SEA PROGRAM (http://www.tas.noaa.gov)

Participants in this program live and breathe the experience of the science at sea. Teachers from elementary through college level conduct research or hydrographic surveys side-by-side with scientists and crew aboard one of NOAA's 13 vessels.

Opportunities for scientific study include fisheries research, coastal/oceanographic research and hydrographic surveys. Cruises range from one week to several months. Expenses involve transportation and college credits if desired. NOAA's expectations include: (1) submitting a report to detail cruise events and ideas for implementation in the classroom; (2) development of a mini-unit of lessons based on the experiences; (3) publication of an article or doing a presentation at an educator's conference.

Information provided at this poster session will be based on experiences aboard the *Rainier* off the coast of Alaska. Opportunities involved coastal charting through the use of side-scan sonar, bottom sounding systems, current and tide monitors. Life at sea experiences included: being at the helm of a launch; touring ship engineering systems; safety training; collating data in the computer lab; nautical knot tying; helping in the galley; viewing eagles, bear, whales, sea otters; learning the history of navigation; and eating in the officer's dining hall.

3. THE MAURY PROJECT

http://www.ametsoc.org/amsedu

Selected teachers attend a workshop at the U.S. Naval Academy for two weeks. The Academy department provides the facilities and use of the 108 ft. research vessel. Guest speakers include nationally recognized leaders in physical oceanography from agencies such as: the National Science Foundation, NOAA, the Office of Naval Research and the Naval Meteorology and Oceanography Command. In addition, teachers tour the Baltimore Aquarium, NOAA and U.S. Navy Oceanographic facilities in the Washington, D.C. area.

There are two components to this teacher enhancement program: (1) to provide training in the use of classroom ready modules on oceanography; and (2) to develop a core group of teachers who will share this expertise with other teachers in their states. Funding from the Naval Meteorology and Oceanography Command, the Office of Naval Research and the National Environmental, Satellite, Data and Information Service provide transportation, tuition, a stipend, along with room and board for attendance.

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The single topic modules include teacher's guides, background information and activities to reinforce the learning of the material. Modules include:

- Wind drive Ocean Circulation
- Density Driven Ocean Circulation
- Coastal Upwelling
- Ocean Tides
- Ocean Tides on the Web
- Measuring Sea Level from Space
- Ocean Sound
- Shallow Ocean Wave
- El Nino: Atmosphere Ocean Connection
- AMS Pressure Blocks

4. IMPLEMENATION IN ELEMENTARY CLASSROOMS

The immersion experience of research at sea with NOAA, combined with the practical and theoretical background included in the Maury Project, provide exceptional training in fundamental oceanographic concepts. These concepts can be enthusiastically integrated through existing curriculum requirements. Reading skills and technology research are incorporated through a slide show web site located at:

http://www.pennmanor.net/staff/deal/tas

Current events are stressed through a newspaper activity. Articles found may link to economics, government, scientific research, weather, environmental studies, and recreation. Another activity on sea level measurement combines math, data collection and data analysis. Handouts will also be provided on related trade books. All of these activities will raise student's awareness of the role oceans play in the quality of our lives and our well being.

5. REFERENCES

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