

## **PROGRAM OVERVIEW**

### **Introduction**

The *Weather & Water 5<sup>th</sup> Grade Program* is a comprehensive nine-week program that is aligned with the California Science Content Standards and is assessment based. The program promotes inquiry-based science learning by incorporating a hands-on investigation each week. Students have access to weather data through Web sites designed by the Ocean Institute and Scripps Institution of Oceanography. They use this data to connect the concepts they learn with the weather they experience on a daily basis.

Each week of the program addresses at least one of the weather and water 5<sup>th</sup> grade earth science standards. Multiple instructional strategies are employed each week to provide students with several opportunities to learn the content standards. Classroom instruction is based on two 60-minute science sessions per week. One session per week is dedicated to direct instruction, and the second session uses inquiry-based investigations to promote investigation and experimentation skills.

This program includes assessment as an important component and should help students prepare for standardized tests. Assessment is embedded within each lesson in order to help teachers continually evaluate their students' knowledge and understanding. The main form of assessment throughout the program is the Science Notebook that the students will use for each science lesson. Other strategies that are integrated into the program include classroom discussions, worksheets, and quizzes with multiple choice and short answer questions. The final week of the program is dedicated to final assessment.

Students also participate in a *Weather & Water* field trip to the Ocean Institute that has been specially designed to reinforce concepts they have learned in the classroom. Each teaching station engages students in inquiry-based investigations that are not easily duplicated in a classroom. Students conduct investigations to solidify an understanding of the basic concepts of the water cycle and weather patterns and then apply their knowledge to real world situations.

## **PROGRAM COMPONENTS**

### **Professional Development**

The success of this program is dependent upon proper professional development for the teachers. The professional development is designed to enhance the teachers' ability to help students master the content standards. Teachers learn how to teach the direct instruction lesson and the student investigation lesson for each week of the program. They participate in each activity, so they will know what to expect when they teach it in their classroom. They are also introduced to the homework lessons plus English Language Learner modifications, Gifted and Talented Education options, and Web site activities. Science Notebooks are used throughout the program, so teachers are also trained on how to use Science Notebooks as an assessment tool.

## **Classroom Instruction**

### **Notebook and Kit**

The teacher notebook and the accompanying science kit are used every week in the classroom. The notebook includes the lesson plans for each week, assessment strategies, quizzes, question banks for customized quizzes, a glossary, and the necessary forms for the field trip to the Ocean Institute.

The lesson plans are comprehensive and include background information, links to content standards, performance objectives, recommended assessment strategies, step-by-step procedures, vocabulary, discussion questions and answers, teaching tips, ELL modifications, and suggestions for extensions.

The science kit includes overhead transparencies and all significant materials required for the demonstrations, student investigations, and take-home activities. Materials that are included in the kit are indicated on the materials list for each lesson. There are some materials that teachers may have to ask students to bring from home. To help teachers coordinate this, a sample letter to parents and a list of the necessary items are included in the notebook in the Resources section.

### **Storyline**

Each week includes a storyline that provides a general overview of the week. It includes a link to the previous week, the sequence of lessons, a link to content standards, the main concepts, an overview of each lesson, and suggestions for curriculum integration.

### **Direct Instruction (DI)**

Each week includes a 60-minute direct instruction lesson that is used to introduce the concepts and content standard for the week. There are several direct instruction strategies that are used throughout the program. These include demonstrations, reading assignments, and note-taking lessons.

### **Student Investigation (SI)**

Each week includes a 60-minute student investigation lesson in which students participate in a hands-on, inquiry-based investigation. These lessons integrate the content standards with the investigation and experimentation standards. Students use their Science Notebooks to keep a record of each investigation they conduct. Science Notebook pages are included in each lesson plan to facilitate using this technique.

### **Homework**

Concepts are reinforced through homework assignments each week. These lessons include hands-on activities, worksheets, and a home water use survey. Family members also participate in these activities.

### **English Language Learner (ELL) Modifications**

There are three ongoing modifications throughout the program: the creation and maintenance of a Word Wall and Illustrated Dictionary and bilingual buddy grouping. See the *ELL Modifications* page for specific details. Additional modifications are provided for

each direct instruction lesson, student investigation, homework, and Web site activity. These modifications can be found in the introductory sections of the individual activities just before the **TEACHING TIPS** section.

### **Gifted and Talented Education (GATE) Option**

A Gifted and Talented Education option is included for each week of the program. These lessons include a range of options for alternatives or modifications to the standard student investigation and extensions for the direct instruction lesson.

### ***Weather & Water Web Sites***

Technology is incorporated into the program through kid-friendly Web sites that have been designed specifically for the *Weather & Water* program by the Ocean Institute and Scripps Institution of Oceanography. Web site activities use historical and real-time data from weather sensors throughout southern California to reinforce the weather concepts that are taught during the science lessons. The activities are designed to be completed during a 60-minute computer lab session with students working on their own or in small groups. A lesson plan for each activity is included in the notebook so teachers can assist the students throughout the activities.

### **Assessment Strategies**

Assessment is an important part of the program, so recommendations for pre-assessment, weekly assessment, and the unit assessment are included in the introduction section of the notebook. Each lesson plan also includes a recommended assessment strategy. A description of how to use the strategies in the classroom is included in the notebook. Quizzes are provided, as well as a question bank with an answer key to assist teachers in the development of customized quizzes that are administered throughout the nine-week program.

### **Ocean Institute Field Trip**

Students participate in a *Weather & Water* field trip to the Ocean Institute to reinforce concepts that they have learned in the classroom. Each teaching station engages students in inquiry-based investigations that are not easily duplicated in a classroom. Students continue to use their Science Notebook to explore the water cycle, convection currents, and weather maps. Students apply their knowledge of these concepts to real world situations that are presented in an interactive, hands-on format.

### **Program Evaluation**

Measuring both teacher and student impacts from the *Weather & Water 5<sup>th</sup> Grade Program* is important to the educational designers, project funders, and future users. We understand that it will take additional time for you to complete the surveys, but we ask for your participation in all five critical assessments, which include teacher pre-unit and post-unit surveys, student pre-test and post-test (see Resources section for a master copy of these tests), Weeks 1 through 4 unit assessment, Weeks 5 through 9 unit assessment, and a field trip survey. These surveys will be sent to you throughout the unit, and we appreciate prompt returns.