NHU/NASA Summer Institute

Lesson Plan

Student Name ___Zackary Long____ Date ___November 1, 2003_____

Lesson Plan Title	California Landforms and Geography
Grade Level	Sixth Grade
Concept/Topic to Teach	1. The names and appearances of major geologic features 2. Inference and observation skills 3. Geographic awareness and appreciation
Standards	1f. Students know how to explain major features of California geography 2. Topography is reshaped by weathering of rock and soil and by the transportation and deposition of sediment. 7a. Students will develop a hypothesis.
General Goals	1. Students will work cooperatively to analyze photographs of Earth taken from orbit.
Specific Objectives	1. Students will be able to recognize and describe major geologic and geographic features. 2. Students will translate their general geologic and geographic knowledge to California, and be able to describe where the various landforms are found in California
Required Materials	1. NASA educational product: “Exploring Earth from Space”, including lithographs. 2. Outline maps of California and the World 3. Student atlases 4. Overhead projector 5. A computer lab with internet access

Anticipatory Set	1. Students will be asked to brainstorm: list all the landforms you can think of. 2. Students will share out their ideas to the group. 3. We will then categorize the landforms into groups.
Step-by-Step Procedures	**Before the Lesson**: Prepare a series of questions relating to the lithographic photos and the information on the rear. Questions should be both observational and inferential in nature. **Lesson** Day One 1. Anticipatory set 2. Students will be broken into pairs [or groups of 3 if necessary] and asked to define the landforms that were listed in Step One. They will be asked to hypothesize about those terms with which they are not familiar. Day Two 1. I will then pass out a blank outline map of California to each pair. 2. Students will be asked to hypothesize where the various landforms might be found in California. 3. Each pair will be matched with another pair to compare their hypothesized maps. 4. Each pair will be given one of the lithographs from the NASA set. Each pair will also receive the questions written about each lithograph. 5. Students will be given a world map. They will mark the landforms they read about on this map. 6. Students will be given 6 – 8 minutes to observe the lithograph, read the information on the back, and answer the questions. 7. Then switch. Day Three 1. If you have 14 groups, switching every 6 – 8 minutes, students will spend to full class period observing and analyzing the lithographs. Day Four 1. More lithographs

	Day Five 1. Students go to the computer lab. 2. Now that they have pictures in their heads of the various landforms seen from above, they will explore satellite images of California. 3. Students will check out "earth.jsc.nasa.gov" which features a searchable database of satellite of California cities and regions. 4. Students will use their atlas to mark the landforms on a second copy of the blank California outline map. 5. Students will compare their initial and final maps. Day Six 1. Assessment
Plan for Guided Practice	1. When students receive the first lithograph they will be shown how to access the information contained therein. 2. When students go to the computer lab they will be shown how to utilize the NASA image website.
Plan for Independent Practice	1. Students will independently [and in pairs] analyze the images and answer the questions. 2. Students will navigate the website independently.
Assessment (based on objectives)	1. Students will be quizzed on landform names and descriptions 2. Students will be given printed versions of satellite images they haven't seen and asked to interpret the landforms contained therein. 3. Students will be assessed based on the quality of their completed maps. 4. Students will be assessed based on their answers to the lithographic questions.
Adaptations (ELL students or special populations)	1. Students will be paired according to their ability [strong student paired with a struggling student]. 2. Lesson utilizes visuals and interactive communication to facilitate different learning modalities. 3. Lesson integrates technology.

Extensions (for gifted students)	1. Students will be encouraged to illustrate their maps as accurately as possible. 2. Students will be offered extra credit if they wish to analyze an additional aerial image. 3. Students with technology skills will be utilized as tutors while in the computer lab.