**NHU/NASA Summer Institute**

**Lesson Plan**

<table>
<thead>
<tr>
<th>Student Name</th>
<th>Zackary Long</th>
<th>Date</th>
<th>November 1, 2003</th>
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<tr>
<th><strong>Lesson Plan Title</strong></th>
<th>California Landforms and Geography</th>
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<tr>
<th><strong>Grade Level</strong></th>
<th>Sixth Grade</th>
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| **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. |
|----------------|---------------------------------------------------------------------------------|

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<tr>
<th><strong>General Goals</strong></th>
<th>1. Students will work cooperatively to analyze photographs of Earth taken from orbit.</th>
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| **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 |
|-------------------------|---------------------------------------------------------------------------------|

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