I. Title of Lesson: Types of Weathering and Prevention of Weathering

II. Author: Patrick Haller

III. Audience: 6th grade

IV. Timeframe for entire lesson: 4 class periods (1 hour each)

V. Abstract/Summary/Description of Lesson:

   On the first day of the lesson, students are introduced to the different types of weathering and complete matching and fill-in-the-blank activities. Alternately, the activities can be given as homework (along with the article and videos in the Sources) as part of a flipped classroom lesson. On the second day, the students will be “detectives” and try to solve a number of mysteries in which a different type of weathering is the “culprit” responsible for causing damage to rocks. On the third and fourth days, the students will complete a lab in which they test how well different coatings (none, saran wrap, and bubble wrap) protect rocks against different types of weathering. The rocks are shaken in containers to simulate physical weathering and soaked in vinegar to simulate chemical weathering. Modified “mock rocks” are used to ensure that some of the rocks show visible damage during the lab, since real weathering occurs over very long periods of time.

VI. Learning Objectives (for each part or section of lesson):

   Students can differentiate among types of weathering in order to complete matching and fill-in-the-blank activities.
   Students can use clues to infer which type of weathering is responsible for causing damage to various rocks.
   Students can analyze experimental data to determine how to best prevent both physical and chemical weathering.

VII. Sources:

   Mock Rock Recipe (Only include sand, flour, and water, and be sure to test ahead of time):
   http://www.fossweb.com/modules3-6/pdfs/EarthMaterials/EMatlsInvDupMstrsENG.pdf
   Student friendly article and videos:
   http://www.youtube.com/watch?v=u_WN2ICRb2M
   http://www.youtube.com/watch?v=6VnVRHIV6j4

VIII. Attachments:

   Types of Weathering Presentation
   Matching and Fill-in-the-Blank Activities
   Matching and Fill-in the Blank Activities-KEY
   Mystery Clues
   Student Mystery Chart
   Weathering Lab
IX. Any relevant standards:

2a. Students know water running downhill is the dominant process in shaping the landscape, including California’s landscape.
7a. Develop a hypothesis.
7c. Construct appropriate graphs from data and develop qualitative statements about the relationships between variables.
7e. Recognize whether evidence is consistent with a proposed explanation.