



Minor Challenge Set #3

STEM Field: Environmental Science

Level: Senior

Challenge Name: Weathering With Walter

Project Cost: 0-20 USD

Materials Required:

- Computer with access to the internet

Duration:

- The challenge take approximately 1 hour to finish, however, the time guideline is an estimation only, and students and mentors can complete the tasks around their schedules

Introduction:

Weathering is the process of weakening and breakdown of rocks, metals, and manmade objects.

Erosion is the geological process in which materials are worn away by natural forces such as wind or water.

Together, these two processes can cause changes in shape, size, and texture of rock structures. They can also cause landslides and wash soil, or pollutants from roads and farms into waterways.

It is important to note that weathering and erosion are not the same concept! Weathering is the breaking down of rock or soil, and erosion is the transportation of these rock or soil pieces.

In Australia, the Twelve Apostles along the Great Ocean Road in Victoria are a result of landscape change and coastal erosion over the years. The rock stacks were formed through erosion. In the 20th century, there were nine rocks in the group, however, in 2005, one of the rock pillars collapsed due to continuing erosion. You can find more information and pictures here:

<https://easyscienceforkids.com/twelve-apostles/>

In this project, you will be on your quest for knowledge about weathering and erosion. You will complete different activities, and compete in a bonus game!

Instructions:

- 1) Navigate to the website on your computer:

<https://www.nationalgeographic.org/interactive/walters-travels-weathering-and-erosion/>

It is recommended you use Chrome browser for this activity. This is a free-to-use website and does not require registration.

- 2) You will see a “Welcome” message similar to the figure below. Click on the arrow to start playing the game.



- 3) Follow the instructions and complete different activities. Your goal is to accumulate as many points as possible. You can gain points through answering questions correctly at each station, and by competing in the final bonus round.
- 4) After completing the activities at each station, you will see a green tick similar to the figure below.



- 5) After completing the bonus round and winning the game, you will see a “Congratulations” message similar to the figure below.



Extension - A Simple Experiment on Erosion

In this experiment, you will simulate water erosion, wind erosion, and glacial erosion. At the end of the experiment, you will examine which type of erosion has the greatest effect on the original structure of the soil.

<https://www.australiangeographic.com.au/education-resources/2017/12/ags-erosion/>

Reflection Questions:

- Are there any improvements you would make to this challenge?
- What are the key science and engineering concepts that relate to this challenge?

- Can you think of any landmarks that were formed by weathering and erosion processes?
- What are some natural forces that cause weathering and erosion to occur?
- What human activities can cause erosion?

Submission Guidelines:

- Submit photos of completion of the activity, including your score for the game. If you attempted the extension task, submit photos of your experiment setup. Include a short summary that addresses the reflection questions.

Note: Remember, if you want to upload pictures of your Minor Challenge that also include you, please check if it is OK with your parent or guardian first.

- The submission form is on the Minor Challenges page:
<https://sciencechallenge.org.au/index.php/minor-challenges/>
Fill out the details and make sure you upload your submission.

Learn More! Resources:

- This article explains the concept of erosion in great detail.
https://www.nationalgeographic.org/encyclopedia/erosion/?utm_source=BiblioRCM_Row
- This article explains the concept of weathering in great detail.
https://www.nationalgeographic.org/encyclopedia/weathering/?utm_source=BiblioRCM_Row

Bibliography:

- Society, N., n.d. *Walter's Travels - Weathering and Erosion*. [online] National Geographic Society. Available at: <<https://www.nationalgeographic.org/interactive/walters-travels-weathering-and-erosion/>> [Accessed 10 March 2022].
- Easy Science For Kids. n.d. *Twelve Apostles Facts for Kids*. [online] Available at: <<https://easyscienceforkids.com/twelve-apostles/>> [Accessed 10 March 2022].