



How important is the Soil?



Grade Level: 9th – 12th Grade

Approximate Length: 125 – 180 minutes

Objectives:

- Understand the world population is growing and new solutions are important before reaching carrying capacity
- Discuss the importance of technology and the role it plays in the agriculture industry
- Learn about the global water crisis and how we can make difference
- Understand the types of alternative energy and how it plays a role in society

Science Standards Available (Teacher will identify which standards to bundle):

- ESS2-2 Feedback in Earth's system
- ESS3-1 Global Impacts on Human Activity
- ESS3-3 Biodiversity, natural resources and human sustainability
- ESS3-4 Reducing human impact design solutions
- ESS3-6 Human impacts on Earth systems
- LS2-1 Carrying capacity of ecosystems
- LS2-4 Biomass and trophic levels
- LS2-5 Cycling of carbon in ecosystems
- LS2-7 Human impact reduction solution

Outline for Program:

- **Interest Approach (5-10 min):** Students will start the lesson by discussing the importance of soil. They will then watch a demonstration, where cutting an apple a certain way shows the usable land on Earth to feed people. Students will see how much land we have to feed the world and why we must preserve it.
- **Opening Activity (15-20 min):** During this time, Students will start the lesson by working as a team in small groups to create a list of everything they know about soil. They will also be asked to explain the difference between a renewable and non-renewable resource and determine where soil would fit. Then as a whole group, we will come together to share our answers, to see how each groups perception might differ.
- **Presentation (45-60 min):** The students will start off by learning the particles of soil and the layers in a soil profile. Then they will learn how to use the Web Soil Survey and see how to find the soil types by their school and house. Student will learn another way to study soil, by creating and analyzing a soil jar. We will go over how to use the Soil Triangle and then how to find the percentages of the layers in the jar, they can be applied to find the texture class. Student will apply this information, along with the color, texture, slope and desired use of the area of land, to create a plan. This plan could be for agriculture production, recreational, tourism, wildlife or residential. Together we will explore these various topics and open student's eyes to the possibilities. This can lead to them making a difference as a consumer or even a career choice.
- **IQhub Scavenger Hunt (45-60 min):** The IQhub is an interactive museum, that will help the students build on topics they have already learned and grab their attention for some new ones as well. Students can work individually or in small groups to explore the IQhub and learn about agriculture and the environment. This museum incorporates Science, Technology, Engineering and Math (STEM) to give students a well-rounded and fun learning experience.
- **Closing Activity (15-30 min):** The students will create a public service announcement (PSA) to help educate other on their agricultural topic. Student will brain storm with their small groups and create their own PSA, which will include a written communication and a poster/ flyer. Some methods of written communications would be a press release, newspaper article, blog, radio announcement, television spot, etc. The poster or flyer will need to include images to grab people's attention.

Additional Resources on YouTube:

<https://youtu.be/cIAtPPdU6E0>