# Soil Savers

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| **Primary Curriculum** | Kindergarten |
| **Supplemental Curriculum** | Grades K–2 |
| **Notes** | Plant growth investigation requires 3 – 4 weeks to complete and is best done with outdoor soil/dirt. Standard unit/refill kit comes with enough materials for 30 students. |

## Description

### What makes soil so special?

Have you ever stopped to think about the ground beneath your feet? It's true, the ground provides us with a place to build our homes and businesses, but it is so much more that that. The soil provides food and shelter for so many members of our ecosystem—where would we be without it? Join Chad and Virginia as they talk about the different ways their businesses are working to improve our soil and all that it produces.

Using the overarching question of what makes soil so special, students explore the interactions between plants, animals, and the environment as they ask themselves: *"How does the soil support the plants and animals in our community?"*

## Main Investigations

### What Do Plants Need To Survive?

### Weather Watchers – Class Research Project


## Number of Lessons*

**Full unit** – 25 lessons
**Supplemental program** – minimum 7 lessons
(requires 3–4 weeks to complete plant growth)

**Lesson = 30–40 min. block, 50% of full unit lessons can be delivered in non-science classes*

## Best Suited For

- Classroom science instruction (Kindergarten)
- Afterschool programs (Grades K-2)

**Overarching Enduring Understanding**

**How does the soil support the plants and animals in our community?**

**Number of Lessons***

Full unit – 25-30 lessons

Supplemental program – minimum 8-10 lessons

**Lesson = 30 – 40 min block, 50% of full unit lessons can be delivered in non-science classes*

## FLOW OF INSTRUCTION

**Introductory Investigation: What Grows Here? (hands-on investigation, occurs during weeks 1 and 2)**

In this introductory investigation students evaluate different types of soil and dirt (e.g., soil, sand, gravel, etc.). They compare what the soil is like (wet vs. dry, big pieces vs. small, etc.) looking at similarities and differences. After this initial discussion students look at pictures (or go outside and look at real world examples) and identify the types of things that can grow in different types of dirt.

**Investigation: What Do We Need? (hands-on investigation, occurs during weeks 3–5)**

In this investigation students will grow plants in different types of soil/dirt and compare the affect of different growing conditions on plant development (sun vs. no sun, water vs. no water, soil vs sand). Throughout this experiment students will learn about the bigger picture of sun, water, and food.

Sun Students will make observations about the sun and ways that it influences their daily life.

Water Students will make observations about the water and ways that it influences their daily life.

Food Students will make observations about the water and discuss how different creatures get food.

**Investigation: Weather Watchers (hands-on investigations, occurs during weeks 3–10)**

Throughout the course of this unit students will track their local weather both individually and as a group. At the conclusion of their *What Do We Need?* investigation students will connect the changes in weather to what the plants needed to grow, why it is important to understand how that may change, and things humans do to protect themselves against those changes.

**Summative Challenge: What We Need! (summative challenge, occurs during weeks 11–12)**

In this summative challenge students create a picture/collage/song the represents the relationships in their ecosystem including sun, water, plants, animals, and humans.

## Parts List

### Full Unit

#### Printed Materials

- Educator Guide
- Individual *My STEM Explorer Notes™* build-a-notebooks
- Timeline sheets
- Introductory investigation sheets

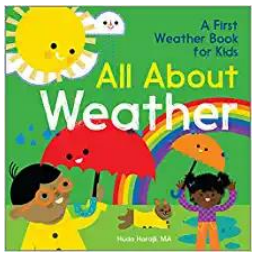
#### Provided Equipment & Materials

- 6 sets of soil and dirt samples – (includes soil, sand, gravel and rocks).
- 30 small planting cups
- Flower seeds
- Soil, sand, pebbles – 1 quart each
- Poster-sized Weather Watchers data recoding sheet

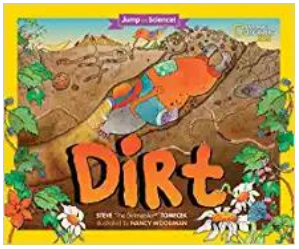
#### Common Equipment & Materials Needed but NOT Provided

- Sharpie
- Water

#### Trade Books








- *All About Weather: A First Weather Book for Kids*
- *Worm Weather*
- *National Geographic Kids, Jump into Science: Dirt*

#### Digital Resources

- Electronic copies of printed materials1
- How-To videos for investigations1
- Easy-to-use links to publicly available videos and other information.

## Supplemental Unit

### Printed Materials

- Educator Guide
- Individual *My STEM Explorer Notes™* build-a-notebooks
- Timeline sheets
- Introductory investigation sheets

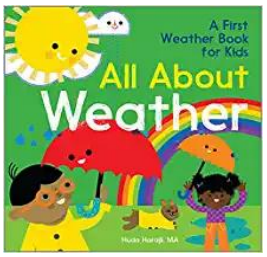
### Provided Equipment & Materials

- 6 sets of soil and dirt samples – (includes soil, sand, gravel and rocks).
- 30 small planting cups
- Flower seeds
- Soil, sand, pebbles – 1 quart each
- Poster-sized Weather Watchers data recoding sheet

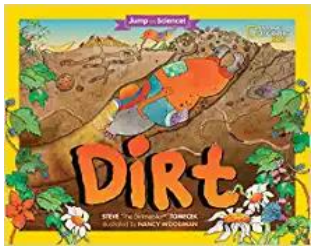
### Common Equipment & Materials Needed but NOT Provided

- Sharpie
- Water

### Trade Books








- *All About Weather: A First Weather Book for Kids*
- *Worm Weather*
- *National Geographic Kids, Jump into Science: Dirt*

### Digital Resources

- Electronic copies of printed materials1
- How-To videos for investigations1
- Easy-to-use links to publicly available videos and other information.

## Refill Kit

### Printed Materials

- Educator Guide
- Individual *My STEM Explorer Notes™* build-a-notebooks
- Timeline sheets
- Introductory investigation sheets

### Provided Equipment & Materials

- 6 sets of soil and dirt samples – (includes soil, sand, gravel and rocks).
- 30 small planting cups
- Flower seeds
- Poster-sized Weather Watchers data recoding sheet

### Digital Resources

- Electronic copies of printed materials1
- How-To videos for investigations1
- Easy-to-use links to publicly available videos and other information.

**Overarching Enduring Understanding**

**How does the soil support the plants and animals in our community?**

**Number of Lessons***

Full unit – 25-30 lessons

Supplemental program – minimum 8-10 lessons

**Lesson = 30 – 40 min block, 50% of full unit lessons can be delivered in non-science classes*

## FLOW OF INSTRUCTION

**K-LS1-1**

Use observations to describe patterns of what plants and animals (including humans) need to survive.

**K-ESS3-1**

Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.

**K-PS3-1**

Make observations to determine the effect of sunlight on Earth's surface.

**K-ESS2-1**

Use and share observations of local weather conditions to describe patterns.

**K-ESS3-2**

Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.

**K-ESS3-3**

Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment

**K-ESS2-2**

Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.

**K-PS3-2**

Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.

**PS1-1** Plan and conduct an investigation to test the claim that different kinds of matter exists as either solid or liquid, depending on temperature. (NYSSLS only)

**Introductory Investigation: What Grows Here? (hands-on investigation, occurs during weeks 1 and 2)**

In this introductory investigation students evaluate different types of soil and dirt (e.g., soil, sand, gravel, etc.). They compare what the soil is like (wet vs. dry, big pieces vs. small, etc.) looking at similarities and differences. After this initial discussion students look at pictures (or go outside and look at real world examples) and identify the types of things that can grow in different types of dirt. (K-LS1-1, K-ESS3-1)

**Investigation: What Do We Need? (hands-on investigation, occurs during weeks 3–5)**

In this investigation students will grow plants in different types of soil/dirt and compare the affect of different growing conditions on plant development (sun vs. no sun, water vs. no water, soil vs sand). Throughout this experiment students will learn about the bigger picture of sun, water, and food.

Sun Students will make observations about the sun and ways that it influences their daily life. (K-LS1-1, K-ESS3-1, K-PS3-1)

Water Students will make observations about the water and ways that it influences their daily life. (K-LS1-1, K-ESS3-1)

Food Students will make observations about the water and discuss how different creatures get food. (K-LS1-1, K-ESS3-1)

**Investigation: Weather Watchers (hands-on investigations, occurs during weeks 3–10)**

Throughout the course of this unit students will track their local weather both individually and as a group. (K-ESS2-1, K-PS3-1) At the conclusion of their *What Do We Need?* investigation students will connect the changes in weather to what the plants needed to grow, why it is important to understand how that may change, and things humans do to protect themselves against those changes. (K-ESS3-2,3; K-ESS2-2, K-PS3-2). NYSSLS extension incorporates a hands-on investigation around ice formation and melting.

**Summative Challenge: What We Need! (summative challenge, occurs during weeks 11–12)**

In this summative challenge students create a picture/collage/song the represents the relationships in their ecosystem including sun, water, plants, animals, and humans. (K-ESS3-1, K-LS1-1, K-ESS3-3)