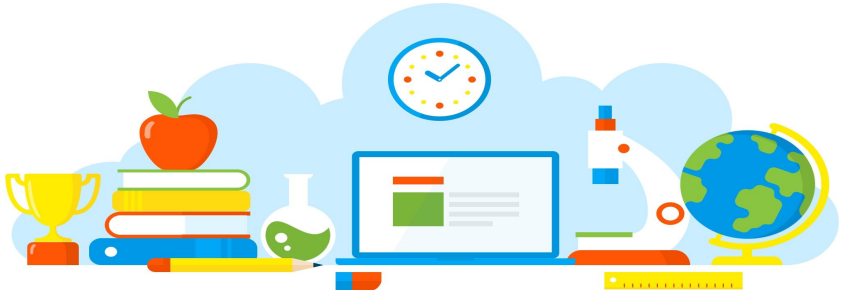

Columns of Science

Students will be given material based on their learning levels, but the topics will be the same. The experiments will be carried out more than once so students master the skills like fire-building, animal handling, and engineering particular devices and structures. Also, these Lessons will be fluid, sometimes spanning days, and sometimes intersecting and relating to each other.

Lesson: What is fire?

TASK 1: Fire

1. Students collect firewood in teams using a map of the property.
2. Students will try various methods in starting a fire, at the fire pit.
3. Students will then be taught how to start a fire.
    a. Analysis of why this method works - the relationship between heat, air flow, and the carbon in the wood.
4. Students will put various things in the fire and observe the effect that fire has on them: leaves, meat, pot of water.
    a. We will check temperatures and times over time and record how fast or slow things cook.

TASK 2: Knowledge

1. Sit around the fire sharing myths about fire from various civilizations.
    a. Analyze the messages about fire in these myths (like the myth of Prometheus).

TASK 3: Energy

1. Boil pots of water.
2. Teach students to build a device that captures the steam:
    a. https://youtube.com/shorts/kU91UQIlvPU?si=zEsJ_NqNDII8VcvH

3. Break down how energy works: the molecular structure of water, the transformation from liquid to gas, pressure, what is heat
    a. Why is there no cold steam?

Philosophical Question: Why are humans the only animal species that loves fire?

LESSON: Life Cycles of Chickens

TASK 1: Feed and Care

1. Prepare the food for chickens and learn to properly feed and water the chickens.
2. Learn proper care for chickens based on the age and gender of the chicken

TASK 2: Handle and Observation

1. Learn how to handle and hold chickens
2. Study the anatomy of a chicken.
3. Name chickens: weekly observation of each chicken and how it changes

TASK 3: Anatomy

1. Students will be given chicken bones. Label and explore the purpose of the bone structures.
2. What chickens can't fly

TASK 4: Feathers

1. Examine feathers using a microscope.
2. Understand the material of feathers: what they are made of, how they work.

TASK 5: Eggs and Knowledge

1. Collect eggs from the chicken coop.
2. Around the fire, share stories and myths featuring eggs and feathers from different civilizations and time periods.
3. Maybe cook an egg over the fire to eat with toast. Observe how the senses react to cooking and eating eggs.
4. Biological and nutritional components of eggs.
5. Begin keeping a catalog of all the animals that reproduce with eggs.

Philosophical Question: What are chickens? To us and to themselves and to nature? Pets or food?

LESSON: Ecology and Gardening

TASK 1: Seeds

1. Give students a mixture of seeds and ask them to try and match them with a picture of what they are.
2. Plant and label seeds for future garden. Learn proper sprouting techniques.

TASK 2: Knowledge

1. Stories and myths about plants told around the fire.

TASK 3: Soil Health

1. Students build garden beds and try to mix appropriate chemistry of soil.
    a. There will be a pile of potash, manure, dirt, and other materials. Students will mix their soils and put them in gardening beds in accordance with the required chemistry.
2. Soil testing: Students will collect samples and get their soil tested to see if it is optimal for growing. If it isn't, then they will experiment with other amendments

TASK 4: WISDOM

1. Students will take notes from a video in outdoor theatre style, prepared by our gardening expert. This will allow them the vocabulary they will need to understand plants and root systems.

TASK 5: Greenhouse Building

1. Students will learn how to build small green houses from plastic and tubing. Teams of students will have their own mini green-houses to monitor over the weeks and months: temperature, growing health of plants, air flow, etc.

Philosophical Question: Do plants have feelings? And if they do, how should we treat them?

LEARNING OBJECTIVES:

Recognize and employ different forms of knowledge building:

- Data Collection and Analysis
- Observation
- Experimentation and Experience
- Knowledge stored in story and myth