**Lesson 1: Types of soil**

**Learning Objective:** students will be able to identify different types of soil through touch and be able to categorize the best types of soil for living things.

**Content:** Basic types of soil

What is soil?

* Soil is the loose upper layer of the Earth’s surface where plants grow. Soil consists of a mix of organic material (decayed plants and animals) and broken bit of rocks and minerals. Soil is important because plants need soil to grow.
	+ Found from: <https://www.ducksters.com/science/earth_science/soil_science.php>

Soil definitions found from: <https://learn.eartheasy.com/articles/know-your-garden-soil-how-to-make-the-most-of-your-soil-type/>

Clay Soil - Feels lumpy and is sticky when wet and rock hard when dry. Clay soil is poor at draining and has few air spaces. The soil will warm up slowly in spring and it is heavy to cultivate. If the drainage for the soil is enhanced, then plants will develop and grow well as clay soil can be rich in nutrients.

Definitions:

* + Cultivate: the act or process of preparing the soil for the raising of crops by loosening or breaking up the soil around the growing area.
		- Definition found from: <https://www.merriam-webster.com/dictionary/cultivate>
	+ Nutrients: a substance that is needed for healthy growth, development, and functioning. Fruits, vegetables and plants all get their nutrients for the soil surrounding it.
		- Definition found from: <https://www.merriam-webster.com/dictionary/nutrient>

Sandy Soil – Feels gritty. Made of minerals and little particles of rocks. Sandy soil does not retain water, it drains easily, dries out fast and is easy to cultivate. Sandy soil warms up fast in spring and tends to hold fewer nutrients as these are often washed away during wetter spells. Sandy soils require organic amendments such as glacial rock dust, greensand, kelp meal, or other organic fertilizer blends. It also benefits from mulching to help retain moisture.

Definitions:

* + Glacial rock dust: it is a pulverized powder that is created after a glacier grinds its way through a rock formation. Tends to contain a winder range of trace materials essential for healthy soil.
		- Definition found from: <https://growingorganic.com/soil-guide/glacial-rock-dust/>
	+ Greensand: is a material from the ocean floor that is mined to be used as a soil fertilizer.
		- Definition found from: <https://www.thespruce.com/organic-fertilizer-green-sand-2539762>
	+ Kelp meal: it is a natural fertilizer that is made from dried seaweed
		- Definition found from: <https://www.maximumyield.com/definition/3383/kelp-meal>
	+ Soil Amendments: amendments are substances added to the soil to improve its physical, chemical and biological properties. Can be organic or mineral amendments
		- Definition found from: <https://m.espacepourlavie.ca/en/organic-amendments>
	+ Fertilizer: a fertilizer is a chemical that helps plants to grow. It is used to replace the mineral salts take by plants or removed by rain.
		- Definition found from: <https://kids.kiddle.co/Fertilizer>

Silty Soil – feels soft and soapy. It holds moisture and is usually very rich in nutrients. The soil is easily cultivated and can be compacted with little effort. This is a great soil for your garden if drainage is provided and managed. Mixing in composted organic matter is usually needed to improve drainage and structure while adding nutrients.

Definitions:

* + Compost: a type of fertilizer that is made from rotting plants. It is easy and cheap to make, as all it really requires is vegetable waste. The vegetable waste is broken down by bacteria (germs), and made into compost.
		- Definition found from: <https://kids.kiddle.co/Compost>
	+ Organic: a fertilizer that is derived from animal or vegetable matter. It is the use of a fertilizer without the use of chemicals, stimulants or antibiotics.
		- Definition found from: <https://www.merriam-webster.com/dictionary/organic>

Peaty Soil - This soil is darker soil and feels damp and spongy due to its higher levels of peat. It is an acidic soil which slows down decomposition and leads to the soil having fewer nutrients. The soil heats up quickly during spring and can retain a lot of water which usually requires drainage. Drainage channels may need to be dug for soils with high peat content. Peat soil is great for growth when blended with rich organic matter, compost and lime to reduce the acidity. You can also use soil amendments such as glacial rock dust to raise pH in acidic soils.

Definitions:

* + Acidic Soil: is the characteristic of soils that have a pH level of less than 7. The pH scale runs from 0-14, so 7 falls in the middle of the scale.
		- Definition found from: <https://www.thespruce.com/what-is-acidic-soil-p2-2130997>
	+ Decomposition: is a process that recycles nutrients back to the soil from formerly living organisms. The process can invlove soil organisms breaking down large pieces of organic matter into smaller ones. Earthworms, insects, and snails are animals involved in initial stages of decomposition.
		- Definition found from: <https://science.jrank.org/pages/1967/Decomposition.html>

Chalky Soil- this type of soil is larger grained and generally stonier compared to other soils. It is free draining and usually overlays chalk or limestone bedrock. The soil is alkaline in nature which sometimes leads to stunted growth and yellowish leaves. This can be resolved by using appropriate fertilizers and balancing the pH. Adding humus is recommended to improve water retention and workability.

Definitions:

* + Humus: is a dark, organic material that forms in soil when plant and animal matter decays. When plants drop leaves, twigs, and other material to the ground, it piles up.
		- Definition found from: <https://www.nationalgeographic.org/encyclopedia/humus/>

Loamy Soil – it is a relatively even mix of sand, silt and clay, feels fine-textured and slightly damp. It has ideal characteristic's for gardening, lawns and shrubs. Loamy soil has great structure, adequate drainage, moisture retaining, full of nutrients, easily cultivated and it warms up quickly in spring, but doesn’t dry out quickly in summer. Loamy soils require replenishing with organic matter regularly and tend to be acidic.

**Teacher Intentions:**

Students will be introduced to the concept of soils and have the chance to see the different components and types of soils. Students will be able to feel the textures of the different types of soils and be able to differentiate between the types of soils. Connecting to environmental education, students will see that soils are an integral part of the ecosystems as soil is the starting point for life.

**Curriculum Connections:**

 Outcome: SE1.1

* Investigate characteristics of the five traditional external senses (i.e., sight, sounds, smell, touch, and taste) in humans and animals.

Indicators:

B) Identify characteristics used to describe the range of observations related to each sense (e.g., sounds can be described as loud or soft, high pitch or low pitch; tastes related to the tongue can be described as sweet, sour, salty, or bitter; textures can be described as hard or soft, smooth or rough, sticky or not sticky; smells can be described as musky, aromatic, pungent, or putrid; and appearance can be described in terms of shape, colour, and lustre).

C) Provide examples of their favourite and least favourite sounds, smells, tastes, colours, and textures.

F) Investigate the sensitivity of different parts of the body to the touch of various materials (e.g., sandpaper, metal, cloth, satin, leaves, and wood).

**Environmental Education Connections**

This lesson introduces the students to different types of soils and allows the students to use their sense of touch to feel how different types of soils feel and how different soils allow for different kinds of plants.

**Lesson 2: Land Pollution**

**Learning Objective:** for students to understand that pollution has a direct effect of the environment. Students will learn about the land pollution.

**Content:**

Information found from: <https://www.ducksters.com/science/environment/land_pollution.php>

What is land pollution:

* Land pollution is anything that damages or contaminates the land

Causes of land pollution:

* Garbage
* Mining – it directly destroys the land producing large holes. It can release toxic chemicals into the air and soil
* Farming – we need farms to eat, but agriculture has destroyed many ecosystems and animal habitats, farming also produces a lot of pollution in the form of chemicals such as pesticides. Animals waste from livestock can also pollute the soil and eventually the water supply
* Factories – many factories produce a large amount of waste and garbage. Some of this waste is damaging chemicals. In some countries there is rules to prevent harmful chemical from getting dumped directly into land.

Effects on the environment:

* It is the most visible pollutions; you can see trash outside of building or on the side of the road
* This type of pollution not only can hurt animals and their habitats but is also ugly and destroys the beauty of nature

Effects of health:

* Different kinds of land pollution have been known to have effects on the health of humans and animals. They harmful chemicals that can get into the soul and water can cause cancer, deformities and skin problems.

What can we do to help?

* Recycle
* Produce less trash – do not use a paper napkin unless necessary, try to find a reusable cloth that can be used then washed. Drink from a reusable water bottle or glass cup instead of a plastic one-use cup. Do not use a plastic straw, try to get a reusable straw or go without.
* Pick up trash – pick up trash when you see it lying around, be careful when picking up trash through as it may be dangerous.
* Composting – composting is when you collect organic waste and store it so it breaks down where it can be used as fertilizer.

**Teacher Intentions:** students will be introduced to one type of pollution to get their minds thinking about their actions, such as littering and how it effects the environment. Students will get to see the effects of littering and if one person throws one piece of trash on the ground the large impact it has.

**Curriculum Connections:**

Outcome: USC 1.5

* Explore the association between a healthy sense of "self" and one's positive connection with others and the environment.

Indicators:

F) Recognize a personal connection to other living things (e.g., gardening - food, love and affection - pets).

G) Examine stories, traditions, and celebrations of others that foster a sense of self and a connection to others and the environment.

J) Illustrate thoughts and behaviours that show a healthy connection to the environment.

**Environmental Education Connections**

This lesson will introduce students the type of pollution they see most often. This will be followed up with lessons going more in depth to the types of pollution there is and the effects it has on animals, plants and humans. Students will participate in a weekly clean up around our community. We will take the garbage we pick up and recycle it appropriately. Students will also start a compost bin in the classroom for their organic waste and it will be used as fertilizer for our plant growth.

**Lesson 3: Growing a Seed**

**Learning Objective:** Students will able to understand how and why a seed begins to grow and the steps a plant takes before it is seen above the soil.

**Content:**

Information found from: <https://betterlesson.com/lesson/639844/seeds-seeds-and-more-seeds>

What is a seed?

* The small parts produced by plants from which new plants grow
* Seed are in most plants, and people even eat seeds, like sunflower seeds
* Most seeds come from flowering plants seed are how flowering plants reproduce.

How do seeds grow?

* When seeds grow it is called germination, germination is the growth of a seed into a young plant or seedling.

Information found from: <https://k8schoollessons.com/germination/>

* Steps of germination:
	+ When condition are right the seed starts to take in water
	+ As water is taken in, the seed swells bigger and bigger until the coat splits apart
		- Seed coat: the hard-protective outer covering around the embryo and the food store. Seed coat protects the embryo and the food store.
	+ Air can then get to the seed. So, the oxygen in the air helps the baby plant burn the food packed inside the seed
	+ Buring the food produces energy. As a result, the baby plant uses the energy to grow.
	+ A tiny root grows downward whereas a shoot begins to grow upwards
	+ The shoot develops and reaches toward the light while the root system develops deep into the soil.
	+ Tiny leaves begin to sprout at the end of the shoot
	+ The primary root grows longer and thicker together with the secondary roots. The leaves grow larger
	+ Finally, more and more leaves grow, and the stem becomes thinker and stronger.
* When seeds grow and given the correct conditions to grow, they produce plants. The correct conditions would be:
	+ Water: helps the seed swell up so the embryo can start growing
		- Embryo: the tiny plant inside the seed which will develop into the adult plant. It consists of the young root and shoot of the plant
	+ Warmth: speeds up and improves the process of germination
	+ Air (oxygen): releases energy for the embryo to germinate

**Teacher Intentions:** Students will be introduced to the concept of seeds and the growth patterns/stages they go through. Students will have the chance to see the process of a seed growing, as their will be an experimental practice going along with this lesson. Students will see the without the proper growing conditions and irrigation systems the plant will not develop and grow to its full potential or die entirely.

**Curriculum Connections:**

Outcome: LT 1.2

* Analyze different ways in which plants, animals, and humans interact with various natural and constructed environments to meet their basic needs.

Indicators:

 B) Pose questions about ways in which plants interact with their environments to meet their basic needs (e.g., How long does it take a seed to start to grow? How does the growth of a plant change if the seed is planted in soil, sans, or rocks? How tall will a bean plant grow?)

D) investigate, through feild trips to natural habitats, nature videos, and community walks, homes and habitats of local plants and animals to determine how they meet their basic needs

**Environmental Education Connections**

This lesson will introduce students to the importance of having the right environmental factors for growing a plant. They will have previous background knowledge of irrigation systems and will be able to provide the proper irrigation system to the plant that is being grown in the classroom. Students will also have a second plant that does not have proper growing conditions and will be able to connect that without care for our environment we cannot live sustainably.

**Lesson 4: Parts of a Plant**

**Learning Objective:** Students will be able to identify and describe the basic parts of a plant. Students will be able to describe different kinds of leaves.

**Content:** <https://kidsgrowingstrong.org/parts-of-a-plant/>

A plant can be defined as a large group of living things that use sunlight to make their own food. Most plants have leaves, stems, roots and either flowers or cones. Plants use a green pigment called chlorophyll to absorb energy from sunlight. Grasses, trees, vines, vegetables, cactuses, ferns and mosses are plants. Photosynthesis is the process in which green plants use sunlight to make their own food.

**1. The major parts of most flowers**

The **flower** attract pollinators and make seeds that will someday grow into plants

**Petal** – petals are what give a flower its unique shape, and are often brightly coloured to attract insects and creatures who aid in the fertilization of ovules through pollination

**Sepal** – the small parts growing at the base of the petals that look like leaves. They cover the outside of the flower and protect the flower before it blossoms

**Pedicel** – the stem or stalk of a single flower. It is the stem that attaches a single flower to an inflorescence

**Receptacle** – the thickened part at the bottom of the flower which holds its major organs.

**2. All About Leaves**

Leaves are food factories. Leaves have little openings that let air and water come and go. Leaves catch energy from sunlight and use it to turn the air and water into food.

**3. All about Stems**

The stem supports the plant and carries water, nutrients and plant chemicals up and down to all the parts of the plant. There can be two different types of stems; woody stems or herbaceous stems

**4. All about fruits and vegetables**

The part of the flower that holds the seed is called the ovary. After pollination, the petals fall away, and the ovary develops into a fruit. The fruit protects the developing seeds. The difference between a fruit and a vegetable are as follows, a fruit is a seed-bearing structure tat develops from the ovary of a flowering plat, whereas vegetables are all other plant parts, such as roots, leaves and stems. If the fruit or vegetable has seeds, then it is considered a fruit and example would be a tomato is a fruit because it has seeds and a carrot is a vegetable because it grows under the soil like a root.

**5. All about Seeds**

Seeds are little cases with a baby plant inside. The parent plant packs the seed with nutrition, just like a lunch. Seeds end up having much more energy than other parts of the plant. A sprout is a continuation of an old life. In a seen even though it may look like nothing is happening inside the seed coat, some of the tissues inside the seed remain active and go through basic metabolic steps, such as cellular respiration. In other words, the see is using small amounts of stored energy, staying alive and “waiting” for good conditions to begin to grow.

**6. All about Roots**

Roots are hidden underground but are very important to the plant. Roots hold the plant steady in the ground, suck up water and nutrients from the soil and even store food for the future. The roots may be called the receiving rooms of the plant factory, for one of their chief functions is to draw water and minerals from the soil. AS rainwater filters into the ground, it dissolves the minerals in the soil. The plant uses this solution for its work in making food. Roots also serve as places to store food. That’s why some roots are so nutritious to eat.

**Teacher Intentions:** Students will be introduced to the different parts of a plant and have a chance to see the breakdown of a plant and how it is developed in different stages. Connecting to environmental education, students will be able to see that through the plant they produce oxygen using light, water and carbon dioxide through a process called photosynthesis and with this process they produce fuel that is used by many animals/humans as food.

**Curriculum Connections:**

**LT1.1 Differentiate between living things according to observable characteristics, including appearance and behaviour**

a. Use a variety of sources of information and ideas (e.g., picture books including non-fiction texts, Elders, naturalists, videos, internet sites, and personal observations) to learn about observable characteristics of living things.

f. Compare observable characteristics (e.g., leaf, root, stem, flower, fruit, and seed) of plants of various types and sizes that live in different habitats.

**LT1.2 Analyze different ways in which plants, animals, and humans interact with various natural and constructed environments to meet their basic needs. (CP, DM, SI)**

a. Identify the physical needs, (i.e., food, water, air and shelter) that plants, animals, and humans require for survival

i. Compare basic human needs of plants, other animals and non-living things.

**Environmental Education Connections**

This lesson introduces students to the different characteristics of a plant and contributes information about each part of a plant in a more in-depth understanding. Through the information they are given about each plant part they can connect it to the environment by understanding how it contributes to the plant growth or the reproduction of another plant. By understanding the different parts of a plant students will be able to comprehend what each of the parts contribute to the plant ad a whole in different ways.

**Lesson 5: How Plants Grow**

**Learning Objective:** Students will be able to identify what plants need to survive and grow their own plant.

**Content** <https://www.gardeningknowhow.com/special/children/how-plants-grow.htm>

**1. Water and Nutrients**

Like humans and animals, plants need both water and nutrients to survive. Most all plants use water to carry moisture and nutrients back and forth between the roots and leaves. Water as well as nutrients, is normally taken up through the roots from the soil. This is why it’s important to water plants when the soil becomes dry.

Fertilizer also provides plants with nutrients and is usually given to plants when watering. The most important nutrients for plants growing needs are nitrogen, phosphorus and potassium. Nitrogen is necessary for making green leaves, phosphorus is needed for making big flower and strong roots and potassium helps the plants fight disease.

**2. Air and Soil**

Fresh, clean air and healthy soil all help a plant grow besides water and nutrients. Dirty air cause by smoke, gases and other pollutants can be harmful to plants, limiting their ability to take in carbon dioxide from the air for making food. It can also block out sunlight, which is also necessary for healthy plant growth.

Healthy soil is extremely vital to plants. In addition to essential nutrients found in soil, soil provides an anchor for plant root and helps support the plant.

**3. Light and Temperature**

Plants also need sunlight to grow. Light is used as energy for making food, a process called photosynthesis. Too little light can make plants weak and leggy looking. They also have fewer flowers and fruits.

Temperature is important too. Most plants prefer cooler nighttime temps and warmer daytime temperatures. Too hot and they may burn, too cold and they will freeze.

**4. Space and Time**

Space is yet another factor to consider when growing plants. Both the roots and foliage need room to grow. Without enough room, plants can become stunted or too small. Overcrowded plants are also more likely to suffer from diseases since airflow may be limited

Plants also require time. They do not grow overnight. It takes time and patience to grow plants, some more so than others. Most plants require a particular number of days, months or even years to produce flowers and fruit.

**Teacher Intentions:** Students will be introduced to the concept on how a plant grows and what it needs to survive. Connecting to environmental education, students will be able to see the different components of what it takes to make a plant grow and the habitat for the plants to grow in. Students will be able to describe the support mechanisms of plant growth.

**Curriculum Connections:**

**LT1.2 Analyze different ways in which plants, animals, and humans interact with various natural and constructed environments to meet their basic needs.**

a. Identify the physical needs, (i.e., food, water, air and shelter) that plants, animals and humans require to survival.

b. Pose questions about ways in which plants interact with their environments to meet their basic needs (e.g., How long does it take a seed to start to grow? How does the growth of a plant change if the seed is planted in soil, sand, or rocks? How tall will a bean plant grow?).

e. Compare ways in which plants and animals that live within the local environment, and plants and animals that live in other environments, meet their needs for food, water, and shelter.

**Environmental Education Connections**

This lesson focuses on introducing students to the concepts of how a plant grows and what it needs for survival and therefore contributes to information about the environment in the given context and background. Understanding the composition of plant growth provides students to understand the different roles in characteristics of the environment and understand what is needed for survival.

**Lesson 6: What about weeds?**

**Learning Objective:** Students will be able to describe two definitions of a weed and list 2 characteristics of a weed.

**Content:** <https://extension.psu.edu/introduction-to-weeds-what-are-weeds-and-why-do-we-care>

**1. weeds**

A weed has numerous definitions; a plant out of place and not intentionally planted, a plant growing where it is not wanted, a plant whose virtues have not yet been discovered, and plants that are competitive, persistent and interfere negatively with human activity.

Weeds are troublesome in many ways. Mainly, they reduce crop harvest by competing for water, light, soil nutrients, and space. Other problems associated with weeds in agriculture include: reduced crop quality by contaminating the product, interference with harvest, serve as hosts for crop diseases or provide shelter for insects overwinter, limit the choice of crop rotation sequences and cultural practices, and production of chemical substances which are toxic to crop plants, animals, or humans.

Characteristics of weeds = abundant seed production, rapid population formation, seed dormancy, long-term survival of buried seed, adaptation for spread, presence of asexual reproductive structures, and ability to occupy sites disturbed by human activities.

Weeds spread by being blown around by the wind, bird excretion if they eat the seeds and deposited on a lawn, seeds can travel along rain pathways, and some seeds have small barbs that may get tangles in animal fur and drop onto lawn. <https://www.spring-green.com/blog-where-do-all-the-weeds-come-from/>

Weeds seem to grow anywhere. Their seeds can lay undeveloped in the soil for years, and pop up when it’s the right conditions to grow. They can grow in dry or wet soil; they can grow in hard or loose soil; they can even survive without proper sunlight or moisture. <https://www.factorydirectchemicals.com/blogs/blog/why-do-weeds-grow-where-they-grow>

**Teacher Intentions:**

Students will be introduced to the definitions of a weed, the characteristics a weed has and the environment they can survive in. Connecting to environmental education, students will see that a weed can grow in almost any environment and doesn’t need many needs to survive. Students will be introduced to the ways in which a weed is different from a plant in the idea of differentiating environments and basic needs for survival.

**Curriculum Connections:**

**LT1.2 Analyze different ways in which plants, animals, and humans interact with various natural and constructed environments to meet their basic needs (CP, DM, SI).**

 a. Identify the physical needs, (i.e., food, water, air, and shelter) that plants, animals, and humans require for survival.

 b. Pose questions about ways in which plants interact with their environments to meet their basic needs (e.g., How long does it take a seed to start to grow? How does the growth of a plant change if the seed is planted in soil, sand, or rocks? How tall will a bean plant grow?).

**Environmental Education Connections**

This lesson introduces students to the thought of weeds and how they play a role in an environment. This material contributes to information in the environment due to the fact that weeds are found in many different environments. This content can be used in future lessons to represent the description of a weed and the characteristics that help students identify between a weed and a plant in an environment. This knowledge allows children to know that weeds can be seen as harmful depending on the environment it is found in.

**Lesson 7: The Importance of the Sun**

**Learning Objective:** Students will be able to describe how the sun suns temperature correlates to the aspect of temperature and why the temperature differs from day to night.

**Content:**

What is the sun?

Information found from: <https://www.eduplace.com/kids/hmxs/g1/weather/cricket/sect2cc.shtml>

* The sun is a star, giving us heat and light, it causes our weather and seasons. The sun gives us all the energy we need to give and grow on Earth.

Information found from: <https://www.nationalgeographic.com/science/space/solar-system/the-sun/#close>

* The sun formed more than 4.5 billion years ago. The sun’s label as “yellow” is misleading since our sun burns a bright white.

What is temperature?

Information found from: <http://www.weatherwizkids.com/weather-temperature.htm>

* A degree of hotness or coldness that can be measured using a thermometer. It’s also a measure of how fast the atoms and molecules of a substance are moving. A number form of the weather
* There is a wind chill which impacts the temperature. The wind chill index is the temperature your body feels when the air temperature is combined with the wind speed.
	+ The higher the wind speed, the faster exposed areas of your body lose heat and the cooler you feel.
* What is a thermometer?
	+ Give a demonstration of how a thermometer works. Put a thermometer in a glass of ice water showing how the mercury line falls, going to a lower point. Then place a thermometer in a glass of hot water.
* Recent increases in the Earth’s temperature has been linked to human activity

Day versus night

Information found from: <https://www.theschoolrun.com/homework-help/day-and-night>

* Day time is when you can see the sun from where you are, and its light and heat can reach you.
* Nighttime is when the sun is on the other side of Earth, and the light and heat do not hit you
* We get day and night because Earth rotates on an imaginary line and different parts of the planets face towards the Sun or away from it
* It takes 24 hours for the world to turn all the way around, we call this 1 day.
* Over a year, the length of daytime in the part of the Earth where you live changes
	+ Days are longer in the summer and shorter in the winter

**Teacher Intentions:**

Students will be introduced to the to the importance of the sun the aspect of day and night. Connecting to environmental education in the classroom that students will see that the sun plays an integral part of our day. The sun supports life around us and the rotation the Earth plays a role in where the sun lies and dictates the length of our day and night. Students will learn about temperature and how to read it on a thermometer.

**Curriculum Connections:**

Outcome: DS 1.1

* Compare and represent daily and seasonal changes of natural phenomena through observing, measuring, sequencing, and recording.

Indicators:

A) Pose questions about changes in natural phenomena (e.g., sunlight, temperature, humidity, and cloud over) in the environment over the course of a day and a year

C) Observe daily and seasonal changes in the amount of heat and light from the sun, including the formation of shadows (e.g., length of day, temperature differences throughout the year, and changes in shadow length throughout a day and a year).

E) Use a variety of tools (e.g., rain gauge, thermometer, and wind vane) and techniques (e.g., chart, diagram, and table) to record changes in weather conditions (e.g., temperature, humidity, wind direction and strength, and amount and type of precipitation) that occur in daily and seasonal cycles.

**Environmental Education Connections**

Students will observe the changing weather patterns throughout the school year periodically. Students will be able to see the correlation of the sun being out and the rise in temperature in the summer and the sun being out and the drop of temperature in the winter and why that is. Students will be able to continue to monitor the weather in their future classroom and keep a running record of the temperature in the same months in different years. After a full year or more of observation students can make their own conclusion if the weather is staying the same, rising or dropping.

**Lesson 8: Water Cycle**

**Learning Objective:** Students will begin to understand the water cycle and the four main parts of it. Students will create/participate in experiments that allow the students to have a hands-on understanding of the specific steps of the water cycles

**Content:**

Information found from: <https://www.theschoolrun.com/what-is-the-water-cycle>

What is the water cycle?

* The water cycle is the continuous cycle that water takes from the sea, to the sky, to the land and back to the sea.
* The movement of water around Earth is important because it supports plant and animal lives. Powered by the Sun, the water cycle is happening all the time.

Information found from:

* The world’s water moves between lakes, rivers, oceans, the atmosphere and the land in an ongoing cycle called the water cycle, it has been recycling water for 4 billion years. As it goes through the system, it can be a liquid (water), a gas (vapor) or a solid (ice).

Information found from: <https://www.kidzone.ws/water/>

Evaporation:

* When the sun heats up water in rivers or lakes and turns it into vapor or steam. The water vapor leaves the river and goes into the air.

Condensation:

* Water vapor in the air gets cold and changes back into a liquid, forming clouds

Precipitation

* Occurs when so much water has condensed that the air cannot hold it anymore. The clouds get heavy and water falls back to the earth in the form of rain, hail, sleet or snow.

Collection

* When water falls back to Earth as precipitation, it may fall back in the lakes or rivers or it may end up on land. When it ends up on land, it will either soak unto the Earth and become part of the “ground water” that plants and animals use to drink or it may run over the soil and collect in the lakes or rivers where the cycle starts all over again.

**Teacher Intentions:**

Students will be introduced to the water cycle and the steps that make up the water cycle. They will participate in hands-on learning to develop a better understanding of the water cycle. Students will be able to make connections to the reason why they see rain and snow to the water cycle. They may be able to make inferences about why it rains more in some months and snows in others. They will connect this back to temperature and seasonal changes.

**Curriculum Connections:**

Outcome: DS 1.1

* Compare and represent daily and seasonal changes of natural phenomena through observing, measuring, sequencing, and recording.

 Indicator:

 H) Sequence or group objects, materials, and events according to one or more attributes related to daily and/or seasonal changes (e.g., group pictures by season, sequence activities according to time of day, group clothing items by season, and sequence stages of garden growth).

Outcome: DS 1.2

* Inquire into the ways in which plants, animals, and humans adapt to daily and seasonal changes by changing their appearance, behavior, and/or location.

Indicator:

I) Communicate questions, ideas, and intentions with classmates while conducting their explorations into daily and seasonal adaptations

**Environmental Education Connections**

Students will develop an elementary understanding about why it rains or snows. This will allow for subsequent lessons to be taught about acidic rain and what happens if we get too much or too little rain and the effects that it has on plant and animal life.

**Lesson 9: Water Irrigation**

**Learning Objective:** Students will learn the importance of the irrigation system and why it is used by farmers instead of relying on only rainfall.

**Content:**

Information found from: <https://study.com/academy/lesson/irrigation-lesson-for-kids.html>

Information found from: <https://www.ocstem.org/wp-content/uploads/Way-to-Flow-Water-Irrigation-Lesson-Plan-Advanced.pdf>

Information found from: <https://www.nationalgeographic.org/encyclopedia/irrigation/>

What’s irrigation?

* Irrigation is the process of watering the ground (lawn or garden). However, it usually refers to supplying a large amount of water to grow crops in dry regions. Irrigation takes the place of rainfall in extreme conditions. or when water is taken from one place and sent to where it is needed.
* Irrigation systems use reservoirs, tanks, and wells to supply water for crops. Reservoirs include aquifers, basins that collect snowmelt, lakes, and basins created by dams.

Information found from: <https://study.com/academy/lesson/reservoir-lesson-for-kids-definition-facts.html>

* + Reservoirs: a large body of water the is being stored until it is needed. It is being held in ‘reserve’; this means to hold on to it until it’s ready to be used

Information found from: <https://study.com/academy/lesson/what-is-an-aquifer-lesson-for-kids.html>

* + Aquifers: is a collection of wet, underground rocks that allow water to pass through them slowly. They are important because they are the main way people get clean, useable water.
	+ Basins: any area of land where precipitation collects and drains off into a common outlet, such as a river, bay or any other body of water
	+ Dams: a barrier constructed to hold back water and raise its level, forming a reservoir
* Crops are irrigated by several methods: flooding an entire field, channeling water between rows of plants, spraying water through large sprinklers, or letting water drop onto plants through holes in pipes.
* Letting water drop onto plants through holes in pipes, known as drip irrigation, is considered one of the most efficient methods of irrigation. Drip irrigation focuses the water onto the plant itself. Other methods can waste water by letting it absorb into the ground where there are no plants.

Why is Irrigation Important?

* Irrigation is important for our survival. Our houses water supply is because of irrigation, which bring water into our homes from a local water supply company. It takes an enormous amount of farmland to grow fruits and vegetables, and sometimes there is not enough rain to grow a fulfilling crop. Therefore, farmers use irrigation to supply the necessary water to their farms. Irrigation is an important process that keeps us healthy and clean.

**Teacher Intentions:**

Students will be able to connect irrigation back to the water cycle. Students will use the water cycle to explain where the water is taken from when irrigation is needed. They will be able to explain why farmers use irrigation instead of letting rainfall be the sole source for watering.

**Curriculum Connections:**

Outcome: OM 1.2

* Examine methods of altering and combining materials to create objects that meet student- and/or teacher-specified criteria.

Indicators:

 D) Use appropriate tools (e.g., glue, scissors, and stapler) correctly and safely for manipulating and observing materials and when constructing useful objects.

Outcome: LT 1.2

* Analyze different ways in which plants, animals, and humans interact with various natural and constructed environments to meet their basic needs.

Indicators:

A) Identify the physical needs, (i.e., food, water, air, and shelter) that plants, animals, and humans require for survival.

G) Explore the challenges that plants, animals, and humans encounter when attempting to meet their basic needs in constructed environments (e.g., lawn, sports field, street, playground, and city).

**Environmental Education Connections**

This lesson will provide a basic understanding of what an irrigation system is and why they are used. There will be subsequent lessons where students will be able to use their knowledge of different irrigation types to care for a plant. Students will be able to experiment by using different objects to put their own irrigation systems together.

**Lesson 10: The Importance of the Sun**

**Learning Objective:** Students will be able to describe how the sun suns temperature correlates to the aspect of temperature and why the temperature differs from day to night.

**Content:**

What is the sun?

Information found from: <https://www.eduplace.com/kids/hmxs/g1/weather/cricket/sect2cc.shtml>

* The sun is a star, giving us heat and light, it causes our weather and seasons. The sun gives us all the energy we need to give and grow on Earth.

Information found from: <https://www.nationalgeographic.com/science/space/solar-system/the-sun/#close>

* The sun formed more than 4.5 billion years ago. The sun’s label as “yellow” is misleading since our sun burns a bright white.

What is temperature?

Information found from: <http://www.weatherwizkids.com/weather-temperature.htm>

* A degree of hotness or coldness that can be measured using a thermometer. It’s also a measure of how fast the atoms and molecules of a substance are moving. A number form of the weather
* There is a wind chill which impacts the temperature. The wind chill index is the temperature your body feels when the air temperature is combined with the wind speed.
	+ The higher the wind speed, the faster exposed areas of your body lose heat and the cooler you feel.
* What is a thermometer?
	+ Give a demonstration of how a thermometer works. Put a thermometer in a glass of ice water showing how the mercury line falls, going to a lower point. Then place a thermometer in a glass of hot water.
* Recent increases in the Earth’s temperature has been linked to human activity

Day versus night

Information found from: <https://www.theschoolrun.com/homework-help/day-and-night>

* Day time is when you can see the sun from where you are, and its light and heat can reach you.
* Nighttime is when the sun is on the other side of Earth, and the light and heat do not hit you
* We get day and night because Earth rotates on an imaginary line and different parts of the planets face towards the Sun or away from it
* It takes 24 hours for the world to turn all the way around, we call this 1 day.
* Over a year, the length of daytime in the part of the Earth where you live changes
	+ Days are longer in the summer and shorter in the winter

**Teacher Intentions:**

Students will be introduced to the to the importance of the sun the aspect of day and night. Connecting to environmental education in the classroom that students will see that the sun plays an integral part of our day. The sun supports life around us and the rotation the Earth plays a role in where the sun lies and dictates the length of our day and night. Students will learn about temperature and how to read it on a thermometer.

**Curriculum Connections:**

Outcome: DS 1.1

* Compare and represent daily and seasonal changes of natural phenomena through observing, measuring, sequencing, and recording.

Indicators:

A) Pose questions about changes in natural phenomena (e.g., sunlight, temperature, humidity, and cloud over) in the environment over the course of a day and a year

C) Observe daily and seasonal changes in the amount of heat and light from the sun, including the formation of shadows (e.g., length of day, temperature differences throughout the year, and changes in shadow length throughout a day and a year).

E) Use a variety of tools (e.g., rain gauge, thermometer, and wind vane) and techniques (e.g., chart, diagram, and table) to record changes in weather conditions (e.g., temperature, humidity, wind direction and strength, and amount and type of precipitation) that occur in daily and seasonal cycles.

**Environmental Education Connections**

Students will observe the changing weather patterns throughout the school year periodically. Students will be able to see the correlation of the sun being out and the rise in temperature in the summer and the sun being out and the drop of temperature in the winter and why that is. Students will be able to continue to monitor the weather in their future classroom and keep a running record of the temperature in the same months in different years. After a full year or more of observation students can make their own conclusion if the weather is staying the same, rising or dropping.

**Lesson 11: Seasonal Changes**

**Learning Objective:** Allow students to discover the different seasons and what months correspond appropriately to each season. Allow students to discover the different looks of nature while the seasons are changing.

**Content:**

Information found from: <http://www.geography4kids.com/files/climate_seasons.html>

Seasonal changes:

* Seasons are created because the Earth actually sits on a small tilt. Since we are at a tilt, different parts of the planet are warmer during different times of the year. With the tilt, our year is broken up into four seasons.

Summer:

* In the northern hemisphere, summer is the warmest time of the year. It is because the top of the Earth is facing the Sun for a prolonged amount of time. The longest day of the year occurs during the summer months. Summer events include high temperatures, longer days, droughts, and tropical cyclones.

Fall/ Autumn:

* This is considered an “in between season”. The sun is directly over the equator during September, heating both sides of the Earth equally. In Fall we move towards shorter days and colder weather. Fall events include leaves falling from trees, shorter days than summer, and harvesting summer crops.

Winter:

* This season is where the Earth is tilted away from the Sun. It is almost constant night with very short days. In December, the Earth begins winter solstice. The shortest day of they year happens. From the shortest day onwards, everything begins to change again. Winter events include colder temperatures, snow and winter storms, the shortest day of the year, and the hibernation of some animals.

Spring:

* It is the season for rebirth and emerging from the short, cold days of winter. Spring months are March through June. Plants and animals atart as soon as the weather starts to warm up even through March is the signal of the official start of spring. The position of the planet is a mirror image to our position in Autumn. The Sun is directly over the equator, both sides of the Earth are receiving about the same amount of energy from the Sun. Spring events include the blooming of flowers, new leaves on trees, warmer days than winter, and wetter weather.

**Teacher Intentions:**

From the first flowers in spring to the snow in the winter, children will be able to see how nature and life around us are impacted by the changing of seasons. Students will be able to observe the changes throughout the year through a continues observation record sheet. They will notice the decrease of animals/insects in the winter and the increase in the spring months. Children will be able to make connections with the lack of animals being around they will be able to denote what season it is.

**Curriculum Connections:**

Outcome: DS 1.1

* Compare and represent daily and seasonal changes of natural phenomena through observing, measuring, sequencing, and recording.

Indicators:

B) Identify the days of the week, months of the year and seasons.

E) Use a variety of tools (e.g., rain gauge, thermometer, and wind vane) and techniques (e.g., chart, diagram, and table) to record changes in weather conditions (e.g., temperature, humidity, wind direction and strength, and amount and type of precipitation) that occur in daily and seasonal cycles.

**Environmental Education Connections** (about, in and/or for the environment)

This lesson primarily introduces students to the four different seasons and the impact the weather has on living things surrounding their environment. The ability to differentiate between seasons will allow students to develop a greater understanding of the plant cycle and how weather impacts living organisms.

**Lesson 12: Exploring Living things and Non-Living things**

**Learning Objective:** Students will be able to compare and contrast living and non-living things. Students will be able to identify 3 characteristics of each a living and a non-living thing.

**Content:** <https://www.kidsworldfun.com/learn-science/living-and-non-living-things.php> https://assets.cambridge.org/97805216/80547/excerpt/9780521680547\_excerpt.pdf

**1. Living**

Living things are things that are alive. People, animals and plants are living things. Living things need a few things to stay alive. These essential things are air, water, and food. Both animals and plants need water.

Characteristics of living things:

* move = all living things move in some way, (ex: animals walk, plants have parts that move to track the movement of the sun)
* grow = growth involves using food to produce new cells, the permanent increase in cell number and size is called growth
* reproduce = all living things have the ability to produce offspring
* breathe through respiration = respiration is the release of energy from food substances in all living cells. Living things break down food within their cells to release energy for carrying out processes
* have sensitivity = all living things are able to sense and respond to stimuli around them such as light, temperature, water, gravity and chemical substances
* need nutrition = living things take in materials from their surroundings that they use for growth or to provide energy. Nutrition is the process by which organisms obtain energy and raw materials from nutrients such as proteins, carbohydrates and fats
* get rid of waste = all living things excrete. As a result of the many chemical reactions occurring in cells, they have to get rid of waste products which might poison the cells. Excretion is defined as the removal of toxic materials, the waste products of metabolism and substances in excess from the body of an organism

For something to be living it has to show all of the seven characteristics of living things.

**2. Non-living**

Non-living things are things that are not alive. They do not need air, food, or water. They do not move, grow, or reproduce.

Some non-living things may show one or two characteristics of a living thing. Example: a washing machine can move; a car needs to be fed with gasoline. Crystals, such as ice crystals forming on a window, grow bigger if the conditions are right.

Non-living things can be divided into two groups. First are the ones which were never part of a living thing, such as stone and gold. The second group are things that were part of living things before. Coal is an example of this. It was formed when trees died and sank into the soft ground. This happened many millions of years ago when the Earth was covered with forests. Paper is non-living but it is also made from trees; jam is also non-living but was made from the fruit of a plant.

**Teacher Intentions:** Students will be introduced, through a variety of sources, to the concept and idea and characteristics of living and non-living things. Students will be able to interact with both a living and a non-living thing. Students will be shown the differences between a living and a non-living things appearance and behaviour. Students will also be shown the similarities between different living things. Connecting to environmental education, students will be shown that living and non-living things are an essential part of an ecosystems and that all ecosystems contain living and non-living objects.

**Curriculum Connections:**

**LT1.1 Differentiate between living things according to observable characteristics, including appearance and behavior. (CP, SI)**

1. Use a variety of sources of information and ideas (e.g., picture books including non-fiction texts, Elders, naturalists, videos, Internet sites, and personal observations) to learn about observable characteristics of living things.
2. Make and record observations and measurements about the observable characteristics of plants and animals using written language, pictures, and charts.
3. Describe the appearance and behavior (e.g., method of movement, social grouping, diet, body covering, habitat, and nocturnal vs diurnal orientation) of familiar animals (e.g., bumblebee, worm, dog, cat, snake, owl, fish, ant, beaver, rabbit, and horse).

**Environmental Education Connections**

This lesson introduces students to the thought of living versus non-living things and contributes to information about and in the environment, which provides context for future lessons. Students will be able to view living and non-living things in their environment and learn the characteristics of each. Students being able to understand the structure of living and non-living things provides a setting for students to understand the role of these things in the environment and understand how ecosystems require living and non-living components to function.

**Lesson 13: Investigate basic needs of animals and plants**

**Learning Objective:** Students will be able to describe what basic needs are. Students will be able to list 3 basic needs of an animal and of a plant.

**Content:** <http://eschooltoday.com/science/needs-of-living-organisms/five-things-living-things-need-to-survive.html>

Every living organism on earth needs some basic things to survive. The amount, way, form or kind of these needs vary from organism to organism.

There are five basic needs that all living things have:

**1. Sunlight**

This is probably the most important need for all living organisms, because it is the source of all energy, heat and light. The amount of sunlight in an area determines what living thing can survive there.

Plants: different plants require different amounts of sunlight to survive. All plants use sunlight to make food (sugars) in a process called photosynthesis. They store the food in their leaves and the energy flows to other animals that eat the leaves.

Animals: different animals need different amounts of sunlight in different ways. Many mammals and reptiles come out during the day to bask in the sun and raise their body temperatures and become active. Many night animals (nocturnal) need light too. When they come out in the night, they feed on living things that got energy from the sun. Animals at the bottom of the ocean depend on dead plants and organisms that sank to the bottom. Those dead organisms and plants contain energy that was produced by the sun.

**2. Water**

Our bodies are made up of about 70% water. Water is the medium in which living cells and tissue work. Water may be consumed by living things, or may be a habitat for them. Animals that use water as their habitat or home are called aquatic animals.

Plant: plants need enough water to carry out photosynthesis. They get the water they need from the soil through their roots. The water in plants carries nutrients to other parts of the plant. Some plants need more water than others.

Animals: animals also need water to carry out cell activity. Some animals drink water regularly to keep hydrated, digest food and build body fluids. Many kinds of fish get oxygen from water. Some animals have water as their habitat. Animals like frogs and turtles need water to lay eggs and reproduce.

**3. Air**

Air is made up of several gases, but the two most important gases are oxygen and carbon dioxide. Without oxygen, animals will die, and without carbon dioxide, plants cannot survive.

Plants: plants use carbon dioxide (together with sunlight and water) to produce energy and give out oxygen. This oxygen is what animals need to survive. Plants absorb carbon dioxide from the air and discharge oxygen through very tiny pores in the leaves.

Animals: animals including humans need oxygen to live. We breathe in oxygen and breathe out carbon dioxide. There are also air pockets in souls and water that help tiny living things survive in water and beneath the soils.

**4. Food (nutrients)**

The food we eat contains the nutrients that our bodies need to replace worn out cells, stay healthy and stay strong. It’s the same for every living organism. Food comes in many different forms, and plants and animals have special organs or parts that absorb the nutrients from the food.

Plants: plants use sugars, fats and proteins to grow and stay healthy. They produce these themselves with the help of sunlight, water and carbon dioxide. The nutrients produced are stored in the plants and the nutrients are passed on to other animals that eat these plants. When living things die and rot in the ground, the nutrients in them end up in the soil and get dissolved in it.

Animals: animals also need food or nutrients to survive. They get nutrients from eating plants. Bigger animals eat other smaller animals for food. Aquatic animals (like fish) eat tiny water insects, worms and plankton. Organisms such as fungi, get their food by breaking down nutrients in organic matter (once living things). All these contain some specific nutrients that the animals need to grow healthy.

**5. Habitat (temperature)**

Every living organism needs a home, shelter or environment that provides the safety, ideal temperature and basic things it needs to survive. One important function of the organism’s home is to provide the ideal temperature in which the organism needs.

Temperatures are not the same everywhere on earth. Some places such as the north and south poles are very cold (-88degrees C). Other places, especially in the tropics can get very warm (up to 50degrees C).

Plants: some places are too cold for plants to survive. These include high mountain peaks such as those in the mountains of British Columbia.

Animals: metabolic and enzyme activities in animals require the right temperatures to happen, otherwise, such processes slow down and affect that living organism.

Certain factors in a living organism’s environment can prevent it from surviving there. Those factors are called “limiting factors”. They include soils, temperature, water, sunlight and physical barriers. Physical barriers may include landforms and water bodies. They often prevent a living organism from moving to another place when conditions get bad in their regular habitat.

**Teacher Intentions:** Students will be presented with the information of basic needs of both animals and of plants. They will have the opportunity to investigate the basic needs of both animals and plants and look deeper into each basic need. Connecting to environmental education, students will view how the environment plays a role in the basic needs of living things as without a strong environment many basic needs are not met. Students also will be shown that not all animals in the same environment have all of the exact same basic needs.

**Curriculum Connections:**

**LT1.2 Analyze different ways in which plants, animals, and humans interact with various natural and constructed environments to meet their basic needs. (CP, DM, SI)**

1. Identify the physical needs, (i.e., food, water, air, and shelter) that plants, animals, and humans require for survival.
2. Investigate, through field trips to natural habitats, nature videos, and community walks, homes and habitats of local plants and animals to determine how they meet their basic needs.
3. Compare ways in which plants and animals that live within the local environment, and plants and animals that live in other environments, meet their needs for food, water, and shelter.
4. Explore the challenges that plants, animals, and humans encounter when attempting to meet their basic needs in constructed environments (e.g., lawn, sports field, street, playground, and city).
5. Compare basic human needs to the needs of plants, other animals, and non-living things.

**Environmental Education Connections**

This lesson primarily presents students to the concept of the basic needs of both animals and plants. This content contributes to information in and about the environment and gives information for further lessons. Understanding the basic needs of plants and animals allows students to understand the effect of the environment on living thing’s needs. This information also allows students to see and understand that environments can be different and the animals and plants that live in them may have different basic needs depending on their surroundings.

**Lesson 14: Learning to care for pets**

**Learning Objective:** Students will be able to demonstrate the needs of taking care of a pet.

**Content:** <https://trupanion.com/blog/2013/10/caring-pet-ways-show-love-animals/>

**1. Caring for a pet**

Exercise with your pet = exercise helps them to burn off stored energy and it gives you a chance to connect with them. Regular exercise is an important part of keeping your pet healthy. Without it, they can become overweight and more vulnerable to illness.

Feed your pet appropriately = feeding your pet is another way to show how much you care. Careful consideration when choosing what food or treats are best for your breed of animal is a great way to keep them healthy and happy. Checking online, going to pet specific stores and checking with your veterinarian are just some ways to get information about what foods and treats are recommended.

Take your pet for check-ups = Early detection of illness, like food allergies and urinary tract infections, can help prevent or cure these problems before they become serious or extremely expensive. Many times, homeopathic remedies can be used in the prevention and cure of these types of illness and for overall natural pet health.

Get your pet groomed = regular grooming is a great way to care for your pet. Clipping their nails will prevent problems with walking. Brushing their teeth reduces bad breath. Bathing them can reduce dander and itching and will make your pet more comfortable. Brushing an animal’s coat helps keep their hair loss to a minimum and it is a terrific way to give them the attention they need.

Keep a regular schedule = This will let your pet know when they need to go out, take a nap, play or get ready for bed. This will help their temperament and will help you create a great relationship with them.

**2. Eating** <http://rsujithra.blogspot.com/p/animals-eat-different-food.html>

Animals are classified into three categories on their eating habits. They’re herbivores, carnivores and omnivores. An herbivore is an animal that eats and gets its energy from eating plants. Many herbivores have special digestive systems that let them digest all kinds of plants. A carnivore is an animal that gets food from killing and eating other animals. Carnivores typically eat herbivores but can eat omnivores and sometimes other carnivores. An omnivore is a kind of animal that eats either other animals or plants. Some omnivores will hunt and eat their food, like carnivores eating herbivores and other omnivores.

**Teacher Intentions:**

Students will be presented with the knowledge of how to care for a pet. Students will see the different things that need to be done when taking care of an animal. Students will be shown the ways to treat an animal and this connects to environmental education by students being taught that pets are an important role in the environment and need to be taken care of by someone who is responsible.

**Curriculum Connections:**

**LT1.2 Analyze different ways in which plants, animals, and humans interact with various natural and constructed environments to meet their basic needs (CP, DM, SI).**

 f. Compare the kinds of food that different animals eat, their methods of eating (e.g., cracking, tearing, strangling, chewing, or swallowing whole), and the structures that they have for eating.

 k. Explore how people demonstrate respect for living things by caring for domestic plants and animals (e.g., growing a plant, hatching eggs, and keeping a pet).

**Environmental Education Connections**

This lesson would allow students the information needed to take care of a pet. This content connects to information for the environment because animals play a role in maintaining a strong ecosystem and with a strong ecosystem will come a strong environment. This lesson will provide an understanding for the importance of looking after and caring for a future pet. Allowing students to learn about caring for an animal will also connect to the environment through having them later on learn and understand ecosystems.

**Lesson 15: Basic Choices for Healthy Behaviors**

**Learning Objective:** Students will be able to identify a healthy behavior. Students will be able to list 3 healthy behaviours.

**Content:**

**1. Brush and Floss daily** <https://chcw.org/the-importance-of-brushing-and-flossing/>

Important to brush and floss to prevent gum disease. Brushing ensures the removal of plaque, which is the primary cause for tooth decay and gum disease. Daily oral hygiene routine should include a thorough brushing that lasts for two minutes at least twice a day and should incorporate flossing. Flossing helps clean out tough to reach spaces. Good idea to change toothbrush every 3-4 months.

**2. Washing Hands** <https://www.betterhealth.vic.gov.au/health/conditionsandtreatments/handwashing-why-its-important>

You should wash your hands after using the bathroom, before/ during/ after preparing food, before eating, after using a tissue, after coughing, after petting animals and after being outside. To properly wash your hands wet your hands with water, apply soap and rub together until bubbles form for 20 seconds, rub hands together rapidly, rinse well under running water, dry your hands and use paper towel to turn the tap off.

**3. Eating Healthy** <https://familydoctor.org/nutrition-tips-for-kids/>

Healthy eating can benefit a child by stabilizing their energy, improving their mind, even out moods, help maintain a healthy weight, and help prevent mental health conditions. A healthy diet is an important way to prevent the onset of disease. Including obesity, heart disease, high blood pressure, and type 2 diabetes.

**4. Drinking water** <https://www.webmd.com/diet/features/6-reasons-to-drink-water#1>

Drinking water helps maintain the balance of body fluids. It can help control calories by substituting it for higher calorie beverages. Water helps energize muscles especially when exercising when children are sweating out body fluids. Water is important for healthy kidneys; body fluids transport waste products in and out of cells and your kidneys clean your body of toxins. Water helps maintain normal bowel function.

**5. Being active** <https://www.healthykids.nsw.gov.au/teachers-childcare/physical-activity.aspx>

Benefits of children being active include; improving sleep, relieving stress, improving confidence and thinking skills, improving cardiovascular fitness, building strong bones and muscles, and helping maintain a healthy weight.

**6. Bathing regularly**

Bathing is important to remove dead skin cells, sweat deposit on skin as well as excreted toxic and waste substances by the body through our skin. Bathing is the best way to clean your skin.

**7. Lots of Sleep** <https://www.hopkinsallchildrens.org/ACH-News/General-News/The-importance-of-sleep-for-kids>

Studies have shown that kids who regularly get an acceptable amount of sleep have improved attention, behaviour, learning, memory, and overall mental and physical health. Not getting enough sleep can lead to high blood pressure, obesity and even depression. Children ages 6-12 need around 9-12 hours of sleep.

**Teacher Intentions:**

Students will be presented with the knowledge of basic choices for healthy behaviours and decision making and learn the different parts of good hygiene. Connecting to environmental education, students will see the importance of healthy choices and their effects on the environment and the environmental aspects that affect healthy choices. Students will view the basic healthy choices and be given the opportunity to practice each healthy choice.

**Curriculum Connections:**

**DM1.1 Examine initial steps (i.e., Stop, Think, Do) for making basic choices regarding healthy behaviours; healthy brain, heart, and lungs; healthy relationships; pedestrian/ street safety; and a healthy sense of self.**

1. Recall routine daily choices and discuss how these choices were made.
2. Examine and record simple ways self and others make routine healthy choices.
3. Discuss similarities in the ways people make healthy choices.

**USC1.1 Examine healthy behaviours and opportunities and begin to determine how these behaviours and opportunities may affect personal well-being.**

e. Illustrate the importance of basic daily behaviours (e.g., washing hands, brushing teeth, eating fruits and vegetables, wearing sun screen and sun protective clothing, being physically active, playing, drinking water, respecting other living things) for good health.

 f. Determine the daily healthy behaviours that can be performed individually and those that may need support (e.g., washing hands on own, applying sun screen with support, smudging with support).

 h. Discuss a variety of healthy behaviours over which one has control (e.g., brushing teeth, being active, engaging in quiet time, seeking shade).

**Environmental Education Connections**

This lesson introduces students to basic choices for healthy behaviours and contributes to information for the environment and teaches the effects for the environment. This content allows for further lessons on healthy behaviour choices. Students understanding of these basic choices allows them to improve good hygiene and understand environmental impacts on choices. Allowing children to learn healthy behaviours allows them to keep their environment around them clean and healthy.

**Lesson 16: Healthy Food Choices**

**Learning Objective:** Students will be able to identify and describe the difference between a healthy food choice and an unhealthy food choice. Students will be able to identify a difficult decision.

**Content:**

Healthy plate = ½ of your plate should be vegetables and fruits (potatoes don’t count because of their negative impact on blood sugar), ¼ of your plate should be whole grains (whole wheat, barley, wheat berries, quinoa, oats, brown rice, and foods made with them. whole wheat pastas have a milder effect on blood sugar than white bread, and white rice), ¼ of your plate should be protein (fish, poultry, beans, and nuts are healthy protein sources, they can be mixed into salads. Limit red meat and avoid processed meats such as bacon and sausage). Drinking water, coffee, or tea is better than sugary diets. Should limit milk and dairy products to one to two servings per day, and limit juice to a small glass per day. <https://www.hsph.harvard.edu/nutritionsource/healthy-eating-plate/>

Decision making = decision making is deciding between two or more things. We make decisions every day and some may be harder than others. (example: choosing what to wear to school versus should you stand up for someone getting bullied). When you are young, adults make most of the decisions for you but there are still times when you have to decide for yourself. If you think things through then you will make good choices.

<http://www.cyh.com/HealthTopics/HealthTopicDetailsKids.aspx?p=335&np=287&id=2975>

**Teacher Intentions:**

Students will be informed about the concept of healthy food choices and what a healthy plate looks like. Students will also see the importance and the difficulty of making a healthy decision versus a non-healthy decision. Connecting to environmental education, students will view the environmental factors of healthy eating. Eating unhealthy has a negative impact on the environment because unhealthy food is typically packaged into plastic and harmful materials to the environment. Students will be able to choose between a healthy food choice and a non-healthy food choice and given the opportunity to explain why.

**Curriculum Connections:**

**USC1.1 Examine healthy behaviours and opportunities and begin to determine how these behaviours and opportunities may affect personal well-beings.**

1. Communicate observations of what “healthy” and “unhealthy” looks like, sounds like, and feels like.

 d. Recognize that making healthy choices can be difficult at times.

**DM1.1 Examine initial steps (i.e., Stop, Think, Do) for making basic choices regarding healthy behaviours; healthy brain, heart, and lungs; healthy relationships; pedestrian/street safety; and a healthy sense of self.**

1. Examine and record simple ways self and others make routine healthy choices.
2. Discuss similarities in the ways people make healthy choices.

**Environmental Education Connections**

This lesson would allow students the ability to identify and describe the difference between a healthy and unhealthy food choice. This information connects to information for the environment due to the factors unhealthy food choices can have on an environment. This lesson will provide a strong base of knowledge to allow for future lessons on healthy food choices. This content also allows for further information into harmful food materials for the environment. This information will benefit student’s understandings of why healthy food is good for them and their environment.

**Lesson 17: All About Milk**

**Learning Objective:** Students will explore the variety of milks available and the source of those milks.

**Content** <http://www.cyh.com/HealthTopics/HealthTopicDetailsKids.aspx?p=335&np=284&id=2940>

**1. Background information**

Dairy farmers raise cows and milk them 2-3 times a day. The milk gathers is processed into ice cream, butter, yogurt and other dairy products. Milk build protein, vitamins and mineral, which are all good for the human body.

**2. Vocabulary**

* **Dairy Cow** – a cow raised by a farmer for milk production
* **Cud** – food swallowed by the cow but not chews thoroughly until later
* **Dry Off** – period when cow is not being milked
* **Homogenize** – to blend milk so that butterfat particles are broken into tiny bits so that the milk is the same throughout
* **Pasteurize** – to heat milk quickly almost to boiling and then cooled quickly to kill germs
* **Silage** – a chopped mixture of green corn, and legumes stored in a silo
* **Udder** – part of the cow where milk is stored

**3. Types of Milk**

**Wholes Milk –** whole milk is actually 3.25% milkfat by weight, not as many people think.

**2% Milk(reduced fat)** – this milk is labeled as 2 percent milk, which means the milkfat is 2 percent of the total weight of the milk

**Low-fat Milk** – the difference between low-fat milk and whole milk is the amount of fat in each serving, this is also reflected in the calories for each as well.

**Fat Free Milk(Skim Milk)** – has the same nutrients as whole milk but have less calories and fat in it.

**Flavoured Milk** – Chocolate and strawberry milk are known as flavoured milk and are a tasty protein food for young kids. This counts as a serving of dairy and provides the dame 9 essential nutrients in each serving.

**4. Importance of Milk**

Due to its nutritional value and the role it plays in growth and development, milk is an important drink for young children. Milk is part of the dairy food group that provides children with an important source of calcium, which is essential for healthy bones and teeth.

**Teacher Intentions:** Students will be introduced to a variety of milks and have the chance to see what makes them different and the importance of milk in our diets. Connecting in to environmental education, students will see that milk can be produced naturally through a cow, this will demonstrate to the students that we can support locally milk famers and receive the same amount of nutrition’s.

**Curriculum Connections:**

**USC1.1 Examine healthy behaviors and opportunities and begin to determine how these behaviours and opportunities may affect personal well-being**

g. recognize daily opportunities for demonstrating healthy behaviours (e.g., drinking water as a thirst quencher, walking on the sidewalk, flossing teeth, helping others).

j. examine factors influencing own healthy choices (e.g., allergies, cultural traditions money, family habits, fear).

**Environmental Education Connections**

This lesson provides information for the students about how milk is important for growth and development and contributes to environment which given a context and background for further lessons. Understanding the importance and different types of milk provides a context for students to understand the roles of milk in daily opportunities.

**Lesson 18: Bees as Pollinators**

**Learning Objective:** Students will understand the importance of bees and the basics of pollination.

**Content** <https://online.kidsdiscover.com/unit/bees/topic/bees-and-pollination>

**1. Vocabulary**

**Pollinator:** insects or vertebrates that carry pollen from one flower to another, fertilizing the flowers and allowing them to fruit

**Colonies:** groups of bees that live and work together

**Nectar:** sweet liquid from flowers

**Pollen:** tiny powdery grains that flowers make

**2. Background information**

Bees and other pollinators are essential to the production of many agriculture crops, including cucumbers, kiwifruit, alfalfa for cattle to eat, even many nuts ad chocolate! Pollinators include many different types of bees, butterflies, bate, flies and even lady bugs.

**3. Discussion Questions:** The Pollination Song: <https://www.youtube.com/watch?v=caUbYOGiIoY>

1. What does a plant need to make a new seed?
	1. Three things give flowers reproductive powers – the sticky pollen, the slender stamen, and pistils make the flower whole
2. What gets the pollen going to keep new plants growing?
	1. Different kids of birds, or the wind. Butterflies and bees carry pollen they need. Birds and insects fin the plants attractive and they spread the pollen as they go. But if they are not bright in colour the wind will carry the pollen.

**Teacher Intentions:** Students will be introduced to basic vocabulary for the concept of pollination and have the chance to understand why it is necessary for bees and plant development. Connecting to environmental education, students will be able to see how pollination is important for plant growth and the well-being of bees.

**Curriculum Connections:**

**LT1.2 Analyze different ways in which plants, animals, and humans interact with various natural and constructed environments to meet their basic needs.**

a. Identify the physical needs, (i.e., food, water, air, and shelter) that plants, animals and humans require for survival

c. Pose questions about ways in which animals interact with their environments to meet their basic needs (e.g., how does a bird move from one tree to another? Where do animals go at night or during the day? How do animals escape from predators?)

e. Compare ways in which plants and animals that live within the local environment, and plants and animals that live in other environments, meet their needs for food, water and shelter

h. Discuss the need for caution when dealing with plants and animals (e.g., students may be allergic to a plant or animals, an animal may bite, and many common household plants are poisonous if ingested).

**Environmental Education Connections**

This lesson introduces students to the concept of pollination and how the bees and other insects affect the growth of flowers and other plants. This information can be contributed to the environment because the students have to be able to understand certain vocabulary and receive background information onto why its important to the plants. Understanding this allows students to broaden there knowledge on bees and how they role of bees are important to the environment society.

**Lesson 19: Food Chain**

**Learning Objective:** Students will be able to explain what a food chain is, discuss key factors, processes and components involved in a food chain. Students will also be able to differentiate a food chain from a food web and identify trophic levels of a food chain.

**Content** <http://www.sheppardsoftware.com/content/animals/kidscorner/foodchain/foodchain.htm>

**1. Food Chain**

Every living thing needs energy in order to live. Every time animals do something (run, jump) they use energy to do so.

Animals get energy from the food they eat, and all living things get energy from food. Plants use sunlight, water and nutrients to get energy. Energy is necessary for living being to grow.

A food chain shows hoe each living thing gets food, and how nutrients and energy are passes from creature to creature. Food chains begin with plant-life, and end with animals-life. Some animals eat plants, some animals eat other animals.

Food webs are more realistic than food chains for showing how consumers and producers are interconnected in nature. In a food web, the arrow moves from organism to who it is eaten by.

**2. Producers**

Plants are called producers. This is because they produce their own food. They do this by using light energy from the sun, carbon dioxide from the air and water from the soil to produce food in the form of glucose/sugar.

**3. Consumer**

Animals are called consumers. This is because they cannot make their own food, so they need to eat plants/or animals to get their energy. There are three groups of consumers, Herbivores the animals that only eat plants, carnivores the animals that only eat other animals, omnivores the animals that eat both animals and plants. Humans are also omnivores.

**4. Photosynthesis**

The cycle of plants and how they make energy. The sunlight, water, minerals and carbon dioxide are all absorbed by the plant. The plant then uses them to make glucose/sugar, which is the energy/food for the plant. Oxygen is also produced by the plant in this cycle, which is then let off into the air.

**5. Decomposers**

They consume(eat) dead plants and animals and decomposes them - reduces them to simpler forms of mater. Fungi and bacteria play an important role in nature. They break down the unused dead material and turn them into nutrients in the soil, which plants use to grow. They are an important part of the food chain.

**6. Trophic levels**

The position an organism fills in a food chain is called trophic levels. Not only do trophic levels describe where organisms are in a food chain, they also let you know who eats whom.

**Teacher Intentions:** Students will be introduced to the concept of food chains and have the chance to see the different aspects of what makes up a food chain. Connecting to environmental education, students will see that food chains are what the animals and plants need for survival and how different parts of the food chains affect the growth and development of the other organisms within. They will also be able to understand the difference between a food web and a food chain and how that affects the environment.

**Curriculum Connections:**

**LT1.1 Differentiate between living things according to observable characteristics, including appearance and behaviour.**

a. Using a variety of sources of information and ideas (e.g., picture books including non-fictional texts, elders, naturalists, videos, internet sights and personal observations) to learn about observable characteristics of living things.

c. Group representations (e.g., photos, videos, drawings and oral descriptions) of plants and animals according to various student-developed criteria.

h. Describe the appearance and behaviour (e.g., method of movement, social grouping, diet, body covering, habitat, and nocturnal vs. diurnal orientation) of familiar animals (e.g., bumble bee, worm, dog, cat, snake, owl, fish, ant, beaver, rabbit and horse).

**Environmental Education Connections**

This lesson focuses on introducing students to the concept of a food chain and the aspects of the food chain and therefore contributes to information about the environment which given a context and background for subsequent lessons. Understanding the concepts of a food chain provides the students with understanding on how plants and animals receive their energy and food.

**Lesson 20: Food Waste**

**Learning Objective:** Students will be able to see why we waste so much food, what the impacts of food waste are and what can be done to reduce food waste.

**Content** <https://www.oddizzi.com/teachers/explore-the-world/food-and-farming/food-waste/>

**1. Food waste: Key words**

**Avoidable waste** – food that was edible at some point before being put in a bin or food waste caddy

**Unavoidable food waste** – food that is inedible such as vegetable peelings, meat, carcasses and teabags

**Post-farm gate** – after food leave the farm

**Personal Carbon Footprint** – the total amount of carbon we produce from all our activities and the choices we make in our daily lives

**Global warming** – a gradual increase in the overall temperature of the earth’s atmosphere generally attributed to the greenhouse effect.

**Methane** – methane is a powerful greenhouse gas and has a significant impact on global climate change. It is emitted through a number of natural processes in the environment, as well as from human activities.

**Landfill** – an area where waste is buried underground

**Recycle** – to make something new from something that has been used before.

**Biodegradable** – possible to break down into very small harmless parts by the action of living things (such as bacteria)

**2. Supermarket waste**

Supermarkets waste food in various ways:

* Unnecessarily strict sell-by dates mean that food is disposed of when it could still be eaten
* Promotional offers e.g. buy one get one free encourage us to buy more food than we need
* Consumer demand for cosmetically perfect food means that irregularly shaped produce can be thrown away
* Poor storage can result in produce having to be disposed of

**3. Household Waste**

Households are by fare the biggest culprit. Everyone of us generates food waste each day and the volume is growing each year. Most of the food we waste is because we either cook, prepare and serve too much or because we don’t use food on time.

**4. What are the impacts of food waste?**

The amount of food we throw away is a huge waste of resources – of all the energy, water and packing used in food production, transportation and storage. This all goes to waste when we throw away perfectly good food. If food waste is thrown into the bin, it will go straight to the landfill. Here it tales up valuable space and releases gases and liquids that can harm the environment.

**Teacher Intentions:** Students will be introduce to the concept of food waste and have the chance to see different ways of way we waste food and what the impacts are on the environment. Connecting to environmental education, students will see that food waste impacts the environment in many ways and goes into our system and creates harmful gases.

**Curriculum Connections:**

**DM1.1 Examine initial step (i.e., stop, think, do) for making basic choices regarding healthy behaviours; healthy brain, heart and lungs; healthy relationships; pedestrian/street safety; and a healthy sense of self.**

a. Recall routine daily choices and discuss how these choices were made

 b. Examine and record simple ways self and other make routine healthy choices

 d. Recognize the importance of thinking before acting.

**AP1.1 Apply the steps and Stop, Think and Do (with guidance) to develop healthy behaviours related to a healthy brain, heart and lungs; healthy relationships; pedestrian/street safety; and a healthy sense of self.**

a. Review the healthy choices over which individuals have control

 c. Select and apply routine healthy choices

 d. Reflect on personal choices in order to guide further application

**Environmental Education Connections**

This lesson primarily introduced students to the concept of food waste and the impacts on the environment and the ways other resources waste food and therefore contributes to information about the environment in given context. Understanding the composition of food waste provides the students with the understanding of how it effects the environment and the ways we waste food.

**Lesson 21: Farm Safety**

**Learning Objective:** Students will become familiar with the level of farm accidents and the importance of safe work practices on the farm. Students will be able to identify health and safety hazards and understand the risks associated with farming.

**Content** <http://www.cyh.com/HealthTopics/HealthTopicDetailsKids.aspx?p=335&np=288&id=1679#3>

**1. Dangers on Farms**

These are some of the tings that can cause injuries to children on farms

* Falls from machinery
* Loud noise, which can damage ears
* Unsafe use of guns
* Unsafe handling or storage of chemicals e.g. fertilisers and weed killers
* Being able to get water, e.g. dams, rivers or irrigation channels
* Tools and equipment left in the wrong place
* All the dangers which can be in a house
* Unsafe use of vehicles, e.g. motorbikes, tractors, quad bikes and cars
* Playing in and around silos (where grain is stored)
* Unsupervised driving of machinery
* Injuries from animals
* Playing in dangerous areas, e.g. sandpits in the side of a hill, swampy grounds.

What you can do – some jobs on the farm may look petty interesting and easy. You may be tempted to try them on your own. This is not a good idea unless you know how to keep yourself safe.

**2. Keeping Safe**

Keeping each other safe is a really good reason for working together. Here are some rules which can be used on farms.

* Always turn off farm machinery if you are leaving it
* Leave safety equipment in place, e.g. brakes and guards
* Take keys out and out them out of reach of young children
* Lock away all chemicals
* Keep guns locked away and ammunition should be kept in a different place
* Make sure water areas are fenced off and the gate is locked
* Leave ladders locked up or lying flat on the ground
* Keep protective glasses, earmuffs, helmets and gloves in easy to reach places
* Always wear a helmet when riding a quad or horses
* Cover up and use sunscreen and hats in the sun
* Tell mom or dad if you notice something that could be dangerous, e.g. worn electrical leads, worn tyres, broken machinery or tools
* Make sure no kids ride on tractors, as tractor roll-overs are on of the most common preventable causes of farm kids and adults being killed
* Put away portable machinery, e.g. lawn mowers, out of the reach of children
* Always wear boots or strong shows outside the house

**3. Learn the skills**

* Get a responsible adult to show you how to do jobs they think you are big enough to do
* Do the jobs while they supervise in case you need help
* Never do a job unless mom or dad has asked you to do it, or given you that task before
* Learn all the skills you need and practise so that you can become safe, e.g. using a knife, climbing trees, using the radio/telephone

**4. Learn the rules of the farm**

* What are the rules about water?
* What do you do if someone is injured?
* What are the rules for riding bikes or horses?
* When do you need to wear work clothes and use safety equipment?
* Tell each other where you are going and when to expect you back.
* What are your family’s emergency rules?
* What if animals get out on the road?
* What if there is a flood?
* What if you find something dangerous?
* What to do if there is a fire or bush fire?
* What if someone gets bitten by an animal?
* What if there are extreme weather conditions?
* What are the emergency numbers that you may have to call?

Practising going through your plan until you know what you need to do. It could save time and maybe someone’s life in an emergency situation.

**Teacher Intentions:** Students will be introduced to farm safety characteristics and have a chance to become familiar with the dangers/hazards of a farm, how to keep safe on the farm and be able to talk to their parents or guardians about what rules they might have on a farm. Connecting it to the environment students will be able to understand that the environment can be a dangerous place if it isn’t treated with care and safety.

**Curriculum Connections:**

**PA1.1 Analyze actions and practices in the family, classroom, and on the playground that support peace and harmony, including rules and decision-making processes.**

b. Describe personal actions in the family and classroom that promote peace and harmony (e.g., sharing, taking turn, using sensitive word choice)

d. Explain purposes of rules in the family and school

g. Describe right and responsibilities in the classroom and playground

i. participate in the creation of rules for classroom task or activities

**Environmental Education Connections**

This lesson works with the students to understand the concepts of safety on farm land and how you can keep yourself and others safe from injuries, therefore contributes to the environment because you are keeping yourself safe as well as knowing the risks of potential farm activities to keep them safe as well. Understanding the composition of safety provides for students to enjoy time with farm life, but also realize that these things can be dangerous to themselves or the farm activity, e.g. animals and farm equipment.

**Lesson 22: Animals habitats and description**

**Learning Objective:** Students will be able to compare and contrast the different habitats and description of animals.

**Content:** <https://www.thoughtco.com/animals-and-their-environment-130920> <http://hyperphysics.phy-astr.gsu.edu/hbase/Biology/animal.html>

**1. Habitats**

Habitats are the environment in which an animal lives in is referred to as its habitat. A habitat includes both living and non-living components of the animal’s environment. Non-living components of an animal’s environment include a huge range of characteristics, temperature, oxygen, wind, soil composition, day length and elevation. Living components of an animal’s environment include plant matter, predators, parasites, competitors, and individuals of the same species. Environmental characteristics (temperature, moisture, food availability, and so on) vary over time and location so animals have adapted to a certain range of values for each characteristic.

There are five major biomes (a biome describes areas with similar characteristics). The five major biomes found in the world are, aquatic, desert, forest, grasslands, and tundra. From biomes you can classify it further into various sub-habitats that make up communities and ecosystems.

Aquatic = includes the seas and oceans, lakes and rivers, wetlands and marshes, and lagoons and swamps of the world. Aquatic habitats include almost every group of animals, from amphibians, reptiles, and invertebrates to mammals and birds.

Desert = deserts are landscapes that have rare precipitation, and known to be the driest areas on Earth. Some are sun-baked lands that experience high daytime temperatures and others are cool and go through chilly winter seasons. Found here are typically grasses, shrubs, and herbs.

Forest = forests extend over about 1/3 of the world’s land surface and can be found in many regions. There are different types of forests. Temperate, tropical, cloud, coniferous, and boreal.

Grasslands = are habitats that are dominated by grasses and have few large trees or shrubs. There are two types of grasslands: tropical grasslands, and temperate grasslands. Grasslands experience dry and rainy seasons. Due to these extremes, they are susceptible to seasonal fires and these can quickly spread across the land.

Tundra = is a cold habitat. It is characterized by low temperatures, short vegetation, long winters, brief growing seasons, and limited drainage. The tundra remains home to a variety of animals. The tundra biome is where you will [often find permafrost](https://www.thoughtco.com/what-is-permafrost-130799). This is defined as any rock or soil that stays frozen year-round and it can be unstable ground when it does thaw. <https://www.thoughtco.com/habitats-basics-4140409>

**2. Description**

Animals are multicellular, obtain their energy by consuming energy- released from food substances, typically reproduce sexually, made of cells that do not have cell walls, are capable of motion in some stage of their lives, and are able to respond quickly to external stimuli as a result of nerve cells, muscle tissue, or both.

**Teacher Intentions:**

Students will be familiarized to the concept of the, characteristics and habitat of animals. Students will be introduced to comparing and contrasting the habitats of animals. Connecting to environmental education, students will view animals in their natural environments and see how environments change depending on the animals and the area in which that environment is. Students will be introduced to the idea of not all animals are the same. Students will be able to view animals and point out the differences and group the similarities.

**Curriculum Connections:**

**OM 1.1 Investigate observable characteristics and uses of natural and constructed objects and materials in their environment**

1. Observe natural and constructed objects and materials in their environment in a safe and respectful manner using all their senses as well as technologies, such as hand lenses, cameras, and microphones, which enhance the senses.

 j. Sequence or group materials and objects according to one or more properties such as texture, colour, smell, hardness, and lustre.

**Environmental Education Connections**

This lesson shows students the ways to compare and contrast the habitats of animals and how to observe and identify an animal. This information contributes to information about and in the environment because animals can be found in the information and play a role in the overall effect of environments. This content allows for future lessons on animal description and students understanding this content allows them to grow a better understanding for environmental factors.

**Lesson 23: Where food comes from**

**Learning Objective:** Students will be able to list 2 places their food comes from. Students will be able to identify food sources in a healthy meal.

**Content:**

**1. Where**

Today we take our food diversity for granted. Most of our fruits, veggies, and our meat were not originally available to us. They came from lands hundreds or even thousands of kilometers away. Almost all of the food we eat today have origins in the tropics and subtropics of Africa, Asia, Latin America and Oceania.

Centers of diversity refers to both crops and livestock which were once wild and made domesticated. They are undergoing adaptation through new traits and diversifying to new varieties due to environment and selection by farmers and subsequent spread. This is why a specific crop can be listed in more than one center of diversity. <http://seedmap.org/where-does-our-food-come-from/>

**2. Food sources** <https://www.eatright.org/food/nutrition/vegetarian-and-special-diets/food-sources-of-important-nutrients-for-vegetarians>

Iron (is an important component of hemoglobin, the substance in red blood cells that carries oxygen from your lungs to the rest of your body) = breakfast cereals, soybeans, spinach and chard, beans, eggs, fish, and red meats

Protein (the body uses protein to build and repair tissue) = beans, peas, lentils, whole grains, soy products, nuts and nut butters, dairy products, and eggs.

Calcium (is used to building bones and keeping them healthy) = milk, yogurt, cheese, collard greens, turnip greens, kale, broccoli, soybeans, chickpeas, black beans, and almonds.

Carbohydrates (they provide energy for all cells and replacement the use of protein from the muscles and organs) = oats, bananas, sweet potatoes, oranges, blueberries, apples, chickpeas, pastas

Fat (are essential to give your body energy and to support cell growth) = avocados, cheese, dark chocolate, nuts, olives, salmon, tuna, tofu, eggs

**Teacher Intentions:**

Students will view the places that their food comes from around the globe and look at food sources in their everyday meals. Students will see that their food comes from many different regions of the world. Connecting to environmental education, students will see that food comes from more than one environment and different foods need a certain environment to be able to survive and grow in. Knowing where their food comes from will help children appreciate environment because it is the source for their food. Students will also view the different components that make up their food and the importance of each.

**Curriculum Connections:**

**DR1.3 Demonstrate awareness of humans’ reliance on the natural environment to meet needs, and how location affects families in meeting needs and wants.**

1. Identify sources of food common in students’ meals (e.g., plants, mammals, fish, birds, animal products like milk, cheese, and eggs).
2. Investigate the process of getting food from source to students’ tables.
3. Trace the geographic origins of food from source to students’ tables.

**Environmental Education Connections**

This lesson would allow students the capability to identify and examine the regions of the world that supply their food to them. This information connects to information about and in an environment due to the fact that our food comes from different environments and play a role in the environment’s purposes. This lesson will provide a base understanding of how environments affect the food growth in that community. This information allows for children to have a stronger respect for being able to have the variety of food they have.

**Lesson 24: Shapes in Agriculture**

**Learning Objective:** Students will be able to define agriculture. Students will be able to use basic geometric shapes to represent agriculture.

**Content**

**1. Agriculture**

Agriculture is a term that encompasses all of the industries and processes involved in the production and delivery of food, fiber and fuel that humans need to survive and thrive.

**2. Shapes in Agriculture**

**Circle** – a circle is a shape that is made up of a curved line. This shape is two-dimensional which means it’s flat.

* Example on the farm: Hay bales, tires on the tractors, foods

**Square** – a flat shape with 4 straight sides where: all sides have equal length and every inside angle is a right angle

* Example on the farm: windows on the barn, surface areas, foods

**Rectangle** – a 4-sided flat shape with straight sides where all angles are right angles, also opposite sides are parallel and of equal length

* Example on the farm: barn, windows, surface area, foods

**Triangle** – a flat figure that has three sides and three points, all sides are equal to each other

* Example on the farm: roof tops, foods

**Teacher Intentions:** Students will be introduced to different shapes and the definition of agriculture they will be able to connect basic math shapes to living or non-living objects on the farm, making connections to agriculture. Connecting to environment education, students will see that there are many different shapes to objects in the agriculture world and be able to better understand that everything comes in its own shape.

**Curriculum Connections:**

**SS1.2 Sort 3-D objects and 2-D shapes using one attribute, and explain the sorting rule**

a. Sort a set of familiar 3-D objects or 2-D shapes using a given sorting rule

**SS1.4 Compare 2-D shapes to parts of 3-D objects in the environment**

a. Identify 3-D objects in the environment that have parts similar to a given 2-D shape.

**Environmental Education Connections**

This lesson introduces students to different shapes throughout the agriculture lifestyle and therefore contributes to information about the environment because they are having to find shapes within. Understanding the definition of agriculture will develop their understanding and allow them to find objects/things within the agriculture environment.