STEM
Science, Technology, Engineering, Math

Preschool Teaching Curriculum
Ages 2.9 to 5 years

YMCA OF CENTRAL MASSACHUSETTS
BOROUGHS FAMILY BRANCH
# Table of Contents

## Planting

Weighing seeds ........................................................................................................... pages 5-6
Drip, drip, drop ....................................................................................................... pages 7-8
The parts of a plant ................................................................................................ pages 9-10
Sprouting spuds ....................................................................................................... pages 11-13
Seed sorting .............................................................................................................. pages 14-15
Seed planting ............................................................................................................ pages 16-18
Root Vegetable viewer ........................................................................................ pages 19-21
Plant patch match .................................................................................................. pages 22-23
Now you know, water to grow ................................................................................ pages 24-26
Marigold Marriage .................................................................................................. pages 27-29
Discover the Lima Bean ........................................................................................ pages 30-32
Let us learn about lettuce ...................................................................................... pages 33-35
Transplanting our plants ......................................................................................... pages 36-38
It’s the same, It’s different ...................................................................................... pages 39-41

## Gardening

Tip Toe through the garden ..................................................................................... pages 42-44
Flower power play dough ....................................................................................... pages 45-47
Sunflower surprise .......................................................... pages 48-50
Flower power potpourri ................................................... pages 51-53
We love our garden ......................................................... pages 54-55
Garden favorites ............................................................ pages 56-58
Gardening station ............................................................ pages 59-61
Hey, hey, what’s it weigh? ................................................. pages 62-63
I can eat a rainbow ........................................................ pages 64-66
Imagine that pumpkin patch ............................................. pages 67-69
It’s good for you too! ....................................................... pages 70-71
Frosty frozen ................................................................. pages 72-74
Like it, love it, try it again ............................................... pages 75-77
Veggie measures ........................................................... pages 78-80
Veggie share ................................................................. pages 81-83
We see weeds ............................................................... pages 84-86

**Greenhouse**

Greenhouse to go! ........................................................ pages 87-89
Exploring our greenhouse .............................................. pages 90-91
Greenhouse effects ....................................................... pages 92-94
Greenhouse go ............................................................. pages 95-97
Rain saver ................................................................. pages 98-99

**Insects**

Bees, Bees, Bees ........................................................ pages 100-101
Insect exploration ........................................................ pages 102-104
Morph Magic ............................................................... pages 105-107
Letting Go ................................................................. pages 108-110
Composting
Check, Care, Compost.............................................................................pages 111-112
Worm excursion.......................................................................................pages 113-115
Worms Make Soil (Worm factory).................................................................pages 116-118
Let’s use it.................................................................................................pages 119-120
Care to compost!.......................................................................................pages 121-123

Field trips and Misc.
Apple twist..................................................................................................pages 124-126
Investigating our community.....................................................................pages 127-129
Wacky weather............................................................................................pages 130-132
Fairy garden................................................................................................pages 133-135
Watering can...............................................................................................pages 136-137
Dirt tunnels................................................................................................pages 138-140
Faking it.........................................................................................................pages 141-143
Pickling pickles............................................................................................pages 144-145
Shake it up....................................................................................................pages 146-149
Souper soup................................................................................................pages 150–152
Sun, shade, shadow....................................................................................pages 153-155
Technology, Engineering, Mathematics

**Topic:** Weighing seeds

**Duration:** 20 minutes

**Learning Objectives:**
To gain an understanding of a scale
To gain a further understanding of more and less, heavy and light

**Activity Description:**
The children will have the opportunity to use scales and learn about different weights and quantities while investigating seeds.

**Materials:**
Weigh Scale
Seeds
Spoons

**Guidelines for Preschool Learning Experiences:**

**Language**
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.

**Number sense**
1. Listen to and say the names of numbers in meaningful contexts.

**Technology and Engineering**
24. Demonstrate and explain the safe and proper use of tools and materials.
Massachusetts Curriculum Frameworks:

PreK-PS4-1: Engage in discussion before, during and after investigations

Lesson Summary:
Give the children a weight scale that has two containers, one on each side. Let them look at it and get the scale to be evenly distributed while empty on both sides. Once the children do this give them seeds to weigh out. Ask the children what they think will happen to the scale when they put seeds in each side. Document their answers. Let the children put handfuls of seeds in both sides and see what happens. Give the children spoons to scoop some out until the scale is even. Have the children empty both sides of the scale and then give them actual number amounts of seed to put in each side. This can go on for quite some time depending on the children’s interest. If you would like to expand this activity you can give the children other items to compare and contrast in the scale. For example, seeds, dry beans, tomatoes, radishes, etc.

Extensions of learning:
What’s the heaviest thing you could weigh?
What is the lightest thing you could weigh?
What is the difference between heavy and light?

Adaptations:
Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning

Place direct lighting over work areas and locate art area near bright indirect light to assist children with visual disabilities.

Use visual pictures or symbols

Use special or adaptive devices to increase a child’s level of communication and/or participation.
Science

**Topic:** Drip, Drip, Drop

**Duration:** 30 minutes

**Learning Objectives:**
To understand the concept of growing through play
To gain a better understanding of how and why things grow
To gain an understanding that water helps plants grow

**Activity Description:**
The children will play a game that allows them to learn about watering plants all while having fun doing it.

**Materials:**
Bathing suits
Watering can
Water

**Guidelines for Preschool Learning Experiences:**

**Language**
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.

**Inquiry Skills**
3. Identify and use simple tools appropriately to extend observations.
Life Science

10. Observe and identify the characteristics and needs of living things: humans, animals, and plants.

Massachusetts Curriculum Frameworks:

PreK-LS1-2 Recognize that all plants and animals grow and change over time.
PreK-ESS2-6 Understand the impact of weather on living things

Lesson Summary:

This is a water play activity so all children should be in their bathing suits. Have all of the children that want to play sit in a circle outside. Ask one child to be the “wacky weather”. Give this child a small watering can and have them slowly walk around the circle of children holding the watering can over their heads. As the child walks around the circle they will let little drips of water fall onto the children’s heads saying, “drip... drip...drip”. When the child dumps the water from the watering can onto a child sitting down and yells “grow”, this child will get up “GROW” like a flower or plant, and chase the “wacky weather” around the circle one time until “wacky weather” sits down in the circle. Do this, until all the children have the chance to be the “wacky weather”.

Extensions of learning:

What does a flower need to grow?
What happens if a flower gets too much water?
What happens if a flower does not get enough water?

Adaptations:

Let children that do not want to participate or get wet sit out.

Additional Resources:

“Explore Water” by Anita Yasuda
“The Water Cycle” by Science Matters
“How a Seed Grows” by Helene Jordan
Science

**Topic:** The parts of a plant

**Duration:** Free choice activity/ Matching Game

**Learning Objectives:**
Children will identify the different parts of a plant and their function. Children will gain hand eye coordination.
Children will match each part of the plant to one another.
Children will sharpen their recognition skills though identification.

**Activity Description:**
This is a plant matching game for the children to do anytime throughout the day or during free play time.

**Materials:**
Two copies of a picture of a flower or plant
Label each part of the plant: flower, stem, leaves, and roots
Laminate them both
Cut one into sections like a puzzle

**Guidelines for Preschool Learning Experiences:**

**Language**
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.

**Number Sense**
3. Use positional language and ordinal numbers (first, second, third) in everyday activities.
Inquiry Skills
1. Ask and seek out answers to questions about objects and events with the assistance of interested adults.

Life Sciences
10. Observe and identify the characteristics and needs of living things: humans, animals and plants.
12. Observe and describe plants, insects, and animals, as they go through predictable life cycles.

Massachusetts Curriculum Frameworks:
Pre-K-LS1-1 Compare, using descriptions and drawings, the external body parts of plants and animals and explain functions of some of the observable body parts.

Lesson Summary:
Have the children match the pictures of each part of the plant or flower while saying the names of each part: plant, flower, stem, leaves, and roots.

Adaptations:
Put numbers to match each part for the children that cannot identify the parts of the plant.
Science, Engineering

**Topic:** Sprouting Spuds

**Duration:** 20 minutes per small group of 4 children

**Learning Objectives:**
- To gain an understanding of the natural way a plant grows
- To learn about how a plant roots down and grows up

**Activity Description:**
- The children will do an experiment to see if a potato will sprout in water.

**Materials:**
- Rooted sweet potato
- Clear cup or container
- Toothpicks
- Drawing paper
- Markers
- Magnifying glass
- Graph paper

**Guidelines for Preschool Learning Experiences:**

**Language**

1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).

2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.

3. Communicate personal experiences or interests.
Composition

16. Use their own words or illustrations to describe their experiences, tell imaginative stories, or communicate information about a topic of interest.

20. Generate questions and gather information to answer their questions in various ways.

Inquiry Skills

1. Ask and seek out answers to questions about objects and events with the assistance of interested adults.

4. Record observations and share ideas through simple forms of representation such as drawings.

Massachusetts Curriculum Frameworks:

PreK-PS1-4 Recognize through investigation that physical objects and materials can change under different circumstances

PreK-LS1-2 Explain that all plants and animals grow and change over time

Lesson Summary:

Have the children investigate a rooted sweet potato. Then talk to the children about “planting” the potato even though it is not a seed. To do this you will need a clear plastic cup or container. Place toothpicks around the middle of the potato. Place the potato vertically in the container. The toothpicks will hold the potato at the top of the cup so half of it is inside and half of it is outside of the container of water. Discuss with the children what they see and what they think is happening to the sweet potato. Give the children paper and markers and let them draw and dictate what they see. Keep this as an ongoing experiment in the classroom and document the changes on a graph.

Extensions of learning:

What do you think is happening to the sweet potato?
How do sweet potatoes grow?
What can you make with sweet potatoes?

Adaptations:

Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning

Place direct lighting over work areas and locate art area near bright indirect light to assist children with visual disabilities.
Make sure children identify themselves before speaking
Use thick cord taped to the floor to mark children’s personal space
Use art materials that provide texture (e.g., gel paint that dries with a raised surface; tempera paint with sand added); high-contrast paper (light, dark, shiny, sparkling); bold colors that are easy to differentiate.
Provide materials with Braille and tactual symbols along with opportunities for development of tactile skills.
Provide good models of communication (in any language).
Use special or adaptive devices to increase a child’s level of communication and/or participation.
Use a favorite toy, activity, technology, or person to encourage communication and/or participation.
Provide opportunities for interaction with typically developing peers.
Use a variety of symbols (tactual symbols, objects symbols, picture symbols such as Mayer-Johnson pictures) around the room along with various printed materials that support children’s primary languages while they are learning English (e.g., books, newspapers, magazines in the dramatic play area).
Arrange the room to encourage language conversations (e.g., tables pulled away from walls so that children sit or stand opposite each other).
Use adaptive equipment and furniture so children can participate in all parts of the curriculum, small and large group activities, circle time, etc., along with their peers
Ensure the classroom space allows for wheelchairs, walkers or other equipment so that children using them can move about the classroom safely and independently

**Additional Resources:**

“Potato Joe” by Keith Baker
“Potatoes Potatoes” by Anita Lobel
“Little Sweet Potato” by AmyBeth Bloom
Mathematics, Science

Topic: Seed Sorting

Duration: 20 minutes +

Learning Objectives:
To gain an understanding of the different sizes, shapes and colors of seeds.
To use mathematics skills to separate, count and compare different seeds.

Activity Description:
The children will have the opportunity to investigate and sort through seeds to get a better understanding of the different types while including mathematic and scientific learning through this activity.

Materials:
Sorting tray
At least four different types of seeds
Colored pencils
paper

Guidelines for Preschool Learning Experiences:

Language
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.
4. Engage in play experiences that involve naming and sorting common words into various classifications using general and specific language.
**Number Sense**

2. Connect many kinds/quantities of concrete objects and actions to numbers.

4. Use concrete objects to solve simple addition and subtraction problems using comparative language (more than, fewer than, same number of).

**Patterns & Relations**

7. Explore and describe a wide variety of concrete objects by their attributes.

8. Sort, categorize, or classify objects by more than one attribute.

**Massachusetts Curriculum Frameworks:**

Pre-K-LS1-4: Use their five senses in their exploration and play to gather information.

Pre-K-ESS1-2: Look for and describe patterns and relationships.

MA.PK.MD.B.3: Sort categorize, and classify objects by more than one attribute

**Lesson Summary:**

Sit the children at a table and give the children at least four different types of seeds all mixed together. Allow the children to investigate the seed mixture. Talk about what they see. Give the children a tray sectioned into at least four areas for the children to separate and sort the different seeds. Give the children paper and colored pencils to document their findings. Let the children trace the seeds, color them, and dictate what they see. The children can count each group of seeds, they can determine, least, most, biggest smallest, lightest, darkest, etc.

**Extensions of learning:**

Why are some seeds big and others small?

What kinds of seeds can we eat?

**Adaptations:** Give children plastic tweezers, or spoons to pick up seeds if they do not want to touch the seeds.

**Additional Resources:**

“The Tiny Seed” by Eric Carle

“Seed to Plant” by Kristin Baird Rattini

“Seeds” by Vijaya Khisty Bodach
Science

**Topic:** Seed Planting

**Duration:** 20 minutes initial planting, on going

**Learning Objectives:**
To gain an understanding of how to plant
To understand how a seed turns into a plant
To further understand the plant life cycle
To understand how to keep a plant alive
To gain a sense of self confidence and accomplishment through caring for a plant

**Activity Description:**
This activity will give the children the opportunity to plant their own plant, while experiencing what it is like to work with soil and seeds. The process will take a little bit of time, but once the children begin to see their sprouts grow from the plantings, their interest will flourish.

**Materials:**
Water
Soil
Pots
Spoons
Seeds
Bowls
Tablespoon

**Guidelines for Preschool Learning Experiences:**

**Language**
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.

3. Communicate personal experiences or interests.

**Number Sense**

3. Use positional language and ordinal numbers (first, second, third) in everyday activities.

**Inquiry Skills**

1. Ask and seek answers to questions about objects and events with the assistance of interested adults.

**Life Sciences**

10. Observe and identify the characteristics and needs of living things: humans, animals and plants.

12. Observe and describe plants, insects, and animals, as they go through predictable life cycles.

**Massachusetts Curriculum Frameworks:**

**PreK-LS1-1** Compare, using descriptions and drawings, the external body parts of animals and plants and explain functions of some of the observable body parts.

**PreK-LS1-2** Recognize that all plants and animals grow and change over time.

**Lesson Summary:**

Begin this activity by sitting four children at a table. Ask the children what they know about planting. Document their answers on a sheet of paper. Now in separate bowls, put on the table: soil, pots, water, scoops, and seeds. Give each child a pot with their name on it. Ask the children to fill their pots with soil. They can do this with their hands or a scoop. After they fill their pot ask them to make a hole in the middle of their soil with their finger. Once they do this let the children choose the seeds they would like to plant. Let the children put the seeds in the hole and cover the seeds with a little more soil. Be sure to read the directions on the seed packages to see how many seeds should be planted in one hole; this will vary depending on the types of seeds you choose. Now allow the children to scoop water onto their plant until it is moist. Use a tablespoon to scoop the water. Place the plants in a window sill to get sunlight. Make sure the children water their plants every day. Depending on the seed choices it may only take a couple of days to see sprouts. Continue to water and care for the plants up until the day it is transplanted into the ground for further growth.
**Extension of learning:**

What do you know about planting?
What will happen to these seeds?
What does a plant need to grow?
How do farmers grow so many plants?
What can you do with the vegetables that you grow?

**Adaptations:**

Give children with sensory integration gloves if they need them.

**Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning**

Place direct lighting over work areas and locate art area near bright indirect light to assist children with visual disabilities.
Provide good models of communication (in any language).
Use special or adaptive devices to increase a child’s level of communication and/or participation.

**Additional Resources:**

Books
“Eating Green” by Sonita Apte
“From Seed to Plant” by Gail Gibbons
“From Seed to Plant” by Allan Fowler
“Oh Say Can You Seed?” by Bonnie Worth
**Science, Technology, Engineering**

**Topic:** Root Vegetable Viewer

**Duration:** Initial activity (15-20 minutes) overall production of activity (2+ weeks)

**Learning Objectives:**

To understand the growing process of a plant from start to finish from an “underground view”

To gain an understanding that some plant roots are edible and some are not

**Activity Description:**

In this lesson we will create a root vegetable garden in a clear plastic viewer for the children to see how the seeds that they plant turn into sprouts, roots and eventually an edible root vegetable for them to enjoy.

**Materials:**

Clear Plastic Root Viewer

18 inch rope

3 kinds of root seeds (carrots, radish, onion)

Water

Coconut husk

1 large mixing bowl

Large mixing spoon

Small spoons

Light blocker

**Guidelines for Preschool Learning Experiences:**

1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).

2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.

3. Communicate personal experiences or interests.
**Number Sense**

3. Use positional language and ordinal numbers (first, second, third) in everyday activities.

**Inquiry Skills**

1. Ask and seek out answers to questions about objects and events with the assistance of interested adults.

4. Record observations and share ideas through simple forms of representation such as drawings.

**Life Sciences**

10. Observe and identify the characteristics and needs of living things: humans, animals and plants.

12. Observe and describe plants, insects, and animals, as they go through predictable life cycles.

**Massachusetts Curriculum Frameworks:**

**PreK-LS1-2** Recognize that all plants and animals grow and change over time.

**PreK-LS1-4** Use their five senses in their exploration and play to gather information.

**Pre-K LS2-2** Using Evidence from the local environment explain how familiar plants and animals meet their needs where they live.

**Lesson Summary:**

Start by letting the children explore the clear viewing tray. After the children have looked through this put it aside. Give the children a bowl to put the coconut coir into. Mix the coconut coir with water until it is a moist, firm (soil like) consistency. Start with a \( \frac{1}{2} \) cup of water and slowly add more if needed. Place that aside. Take the 18 inch rope and cut it into 3 six inch pieces. Take each piece of rope and place it against the side of the clear viewing part of the container, approximately 4 inches apart from one another so they are (vertical) straight up and down to the bottom of the root viewer. This is used as a wick to help water the plants from the bottom up. Add water to the bottom of the reservoir until it hits the ropes and the ropes begin to soak up the water. Once you have done this you can start to add the “soil” coconut coir. Add the soil mixture until it is about an inch from the top of the viewer. Now it is time to add the seeds. Be sure to place the seeds far enough apart from each other so that they can grow (approximately 2 inches apart). The seeds can be added one half inch into the soil. Cover the seeds with a little more soil and then place the viewer in the window or somewhere that light can hit the top of the root viewer. Place the light blocker in the
front of the plastic part of the viewer to help keep the light out of the root part of the viewer. Be sure to only take the light blocker off when you want to view the roots growing. Give the children the opportunity to chart, graph and draw the changes as they happen in the root viewer.

**Extension of learning:**

What kinds of roots can you eat?
What roots can you not eat?
Why do you think the roots need darkness?
What are some important things a plant needs to grow?

**Adaptations:**

Provide gloves for children with sensory integration.

**Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning**

Place direct lighting over work areas and locate art area near bright indirect light to assist children with visual disabilities.

Make sure children identify themselves before speaking

Provide opportunities for interaction with typically developing peers.

Arrange the room to encourage language conversations (e.g., tables pulled away from walls so that children sit or stand opposite each other).

**Additional Resources:**

“The Mysterious Garden of Maude McMutt” by Alyssa Hendrickson-Foy
“Once There Was a Seed” by Judith Anderson and Mike Gordon
“Eating the Alphabet Fruits and Vegetables from A to Z” by Lois Ehlert
Math

**Topic:** Plant Patch Match

**Duration:** 25 minutes 2 children

**Learning Objectives:**
To gain an understanding of different fruits and vegetables.
To strengthen color recognition through matching.
To become familiar with the names of different fruits and vegetables.

**Activity Description:**
The children will have the opportunity to become familiar with color recognition and fruits and vegetables while participating in a matching game.

**Materials:**
- Scissors
- 14+ cards cut into 2x2 inch squares
- 7+ pictures of fruits or vegetables in color
- 7+ color dots
- Glue
- Laminate

**Guidelines for Preschool Learning Experiences:**

**Language**
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.

**Massachusetts Curriculum Frameworks:**

**PreK-LS3-1** Use observation to explain that young plants and animals are like but not exactly like their parents.
Pre-K-PS2-2 Look for and describe patterns and relationships

Lesson Summary:
Create a matching game using 2x2 inch squares of paper. On half of the pieces of paper choose different fruit and vegetable pictures and glue them on. On the other half of the papers make colored dots. Be sure that the color dots match the color of one of the fruits or vegetables pictured.

Example:

Red Tomato/Red Dot

Recommendation:
Laminate the pieces to this game. The pieces will last a longer period of time. Once the game is made, have two children sit across from one another at a small table. Mix the pieces around and keep them face down on the table. The first child will pick two cards. Ask the child if the item on the card matches the color card. Continue this until all the cards are matched up. The children will be able to play this on their own once they are comfortable with the concept.

Extensions of learning:
What are some other vegetables or fruits of the same color?
Where do you think this fruit or vegetable is grown?

Adaptations:
Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning
Place direct lighting over work areas and locate art area near bright indirect light to assist children with visual disabilities.
Provide opportunities for interaction with typically developing peers.
Arrange the room to encourage language conversations (e.g., tables pulled away from walls so that children sit or stand opposite each other).

Additional Resources:
“Growing Vegetable Soup” by Lois Ehlert
Website: Busy Beaver.com (vegetable songs about learning vegetable names)
http://www.kidsparkz.com/vegetables_matching.htm
Science, Math

Topic: Now You Know, Water to Grow

Duration: 20 minutes start up, 2 weeks experiment

Learning Objectives:
To gain an understanding about why a garden needs water
To understand the difference between wet and dry
To gain an understanding about science and experimenting

Activity Description:
In this activity we will be watering three different plants with different amounts of water. We want to show the children the importance of watering plants with the right amount of water.

Materials:
3 plants in pots (grass seed)
Watering can
Water
Paper and writing utensil for dictation and documentation
Camera to take progression pictures

Massachusetts Curriculum Frameworks:
PreK-ESS2-6 Understand the impact of weather on living things.
MA.PK.CC.C.5 Use comparative language, such as more/less than, equal to, to compare and describe collections of objects.
Guidelines for Preschool Learning Experiences:

Language

1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).

2. Participate actively in discussions, listen to the ideas of others, and ask and answer relevant questions.

3. Communicate personal experiences or interests.

Shapes & Spatial Sense

12. Listen to and use comparative words to describe the relationships of objects to one another.

Data Collection & Analysis

15. Organize and draw conclusions from facts they have collected.

Inquiry Skills

1. Ask and seek out answers to questions about objects and events with the assistance of interested adults.

2. Make predictions about changes in materials or objects based on past experience.

4. Record observations and share ideas through simple forms of representation such as drawings.

Life Sciences

10. Observe and identify the characteristics and needs of living things: humans, animals, and plants.

Lesson Summary:

Have the children sit down in a circle time setting. Show them the 3 plants. The plants can just be grass seed sprouts. Talk to the children about watering plants and how each plant will be watered differently. Plant A will be watered once a week, plant B will be watered every day and plant C will be watered twice a day. Have the children give their ideas on what will happen to plant A, B and C. Put all the plants together on a window sill or somewhere that sunlight will hit them. Make sure that all three plants are in the same amount of light. Do this experiment for 2 or more weeks and document what happens throughout this time. After this experiment is over talk with the children to determine what the best amount of water for a plant is.
Extensions of learning:
Why do we need to water plants?
What happens if we water too much?
What happens if we do not water enough?

Adaptations:

Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning

Place direct lighting over work areas and locate art area near bright indirect light to assist children with visual disabilities.

Use special or adaptive devices to increase a child’s level of communication and/or participation.

Ensure the classroom space allows for wheelchairs, walkers or other equipment so that children using them can move about the classroom safely and independently

Additional Resources:
“A Green Kid’s Guide to Watering Plants” By Richard Lay
**Science, Engineering**

**Topic:** Marigold Marriage

**Duration:** 30 minutes to plant/ongoing observations

**Learning Objectives:**
- To gain an understanding about what organic is
- To gain an understanding of what bugs are harmful and which are beneficial
- To gain an understanding about which bugs are attracted to which plants

**Activity Description:**
In this activity the children will plant marigold flowers around the outer edge of the garden. They will learn about how to protect their plants from bugs organically.

**Materials:**
- Marigold seeds or pre-grown Marigold plants
- Small shovel (trowel)
- Water

**Guidelines for Preschool Learning Experiences:**

**Language**
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.

**Shapes & Spatial Sense**
11. Explore and identify space, direction, movement, relative position, and size using body movement and concrete objects.
Earth and Space Sciences
5. Compare and contrast natural materials such as water, rocks, soil, and living organisms using descriptive language.

Life Sciences
10. Observe and identify the characteristics and needs of living things: humans, animals, and plants.

Massachusetts Curriculum Frameworks:
PreK-LS2-3 Give examples from the local environment of how animals and plants are dependent on one another to meet their basic needs

Lesson Summary:
Bring the children outside to the garden area. Discuss with them why you are planting Marigolds around certain parts of the garden and the benefits for the garden. Talk to the children about organic and what it means? If you are using plants, separate them and space them out roughly 6-8 inches apart from one another all on the outer edge of the garden. Have the children dig down into the soil about 4 inches or so to put the plant into the ground. Have the children put the plants into the ground up to the root base and cover with the soil. Pat down gently and water them until moist. Observe the growth, the scent, the size and color of these plants as they grow. Notice if bugs come around, and if the plants inside the garden are thriving. This is one of the best ways to treat a garden for threats (bugs) organically!

Extensions of learning:
What is a Marigold?
Why do you think flowers (Marigolds) help keep some plants safe?
What is organic?
What is pesticide?
Why do we not want pesticide in our garden?

Adaptations:
Give children gloves if due to sensory integration they cannot touch the soil.

Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning
Provide good models of communication (in any language).
Use a favorite toy, activity, technology, or person to encourage communication and/or participation.
Provide opportunities for interaction with typically developing peers.

**Additional Resources:**

[www.toadstoolponds.wordpress.com](http://www.toadstoolponds.wordpress.com)

“Marigold Brightbutton and the Rose Grow “ by [Heather Sylvawood](http://www.toadstoolponds.wordpress.com) and Mary Vertulfo
Science, Mathematics

**Topic: Discover the Lima Bean**

**Duration:** 2 days

**Learning Objectives:**
- To experiment with bean seeds
- To observe the changes of a Lima Bean when soaked in water
- To investigate the inside of a lima bean seed
- To learn the parts to a bean seed

**Activity Description:**

The children will have the opportunity to experiment with bean seeds by soaking them over night. The seeds will expand at least double and then the children will break them open, count them and learn the parts of the seeds.

**Materials:**
- Long tube or jar
- Lima bean seeds
- Water
- Rulers
- Magnifying glasses
- Paper
- Crayons

**Guidelines for Preschool Learning Experiences:**

**Language**

1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).

2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.

**Patterns & Relations**

7. Explore and describe a wide variety of concrete objects by their attributes.

**Life Sciences**

10. Observe and identify the characteristics and needs of living things: humans, animals, and plants.

11. Investigate, describe, and compare the characteristics that differentiate living from non-living things.

12. Observe and describe plants, insects, and animals as they go through predictable life cycles.

**Massachusetts Curriculum Frameworks:**

**Pre-K-PS1-3:** Differentiate between the properties of an object and those of the materials which it is made

**Pre-K-PS1-4:** Recognize through investigation the physical objects and materials can change under different circumstances.

**Pre-K-LS1-1:** Compare, using descriptions and drawings, the external body parts of animals and plants and explain functions of some of the observable body parts.

**Lesson Summary:**

Begin this experiment by giving the children a magnifying glass to investigate the lima bean seeds. Let the children count the beans, measure them in the tube and draw and document what they see. Ask the children what they think is going to happen to the seeds, when they are put in water over night and document the children’s answers. After the children are done looking at the seeds start adding the water to the tube of lima bean seeds. Once the lima beans are submerged in water let them sit overnight. The next day let the children measure the beans. Compare the measurements and talk about what happened with the lima bean seeds. The seeds should expand and double in size. Remove the seeds from the water and investigate them. What happened to the skin? Did the seed stay hard? Once the children are done investigating the whole seed, let them break some of the seeds open. Now look at the inside of the seed. Talk to the children about the different parts of the seed, Hilum, Seed Coat, Embryo, Cotyledons. This will introduce some new vocabulary for the children. Let them draw these parts of the seed and try to identify them. When this experiment is done leave the seeds out for the children to further investigate on their own.
**Extensions of learning:**
How big do you think the lima bean will grow?
What does the lima bean smell like?
What does the lima bean feel like?

**Adaptations:**

**Adaptations for children with Disabilities - taken from Appendix A in Massachusetts Guidelines for Preschool learning**
Place direct lighting over work areas and locate art area near bright indirect light to assist children with visual disabilities.

Arrange the room to encourage language conversations (e.g., tables pulled away from walls so that children sit or stand opposite each other).

Use adaptive equipment and furniture so children can participate in all parts of the curriculum, small and large group activities, circle time, etc., along with their peers.

Ensure the classroom space allows for wheelchairs, walkers or other equipment so that children using them can move about the classroom safely and independently.

**Additional Resources:**
Website: Sciencebuddies.org
Science, Mathematics

**Topic:** Let Us Learn About Lettuce

**Duration:** 20 minutes in small groups

**Learning Objectives:**

To learn that there are different kinds of lettuce and edible greens
To gain an understanding of the nutritional value in lettuce

**Activity Description:**

The children will have the opportunity to examine and experience different kinds of green leafy vegetables through touch, taste, smell and sight.

**Materials:**

Plates
Bowls
Forks
Different types of greens, romaine, iceberg, kale, arugula, spinach, Boston lettuce, red and green leaf lettuce, dandelion leaves, escarole
*Ranch dressing (optional)*

**Guidelines for Preschool Learning Experiences:**

**Language**

1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.
4. Listen to and use formal and informal language.
Composition
6. Use their own words or illustrations to describe their experiences, tell imaginative stories, or communicate information about a topic of interest.

20. Generate questions and gather information to answer their questions in various ways.

Number Sense
2. Connect many kinds/quantities of concrete objects and actions to numbers.

Data Collection and Analysis
15. Organize and draw conclusions from facts they have collected.

Inquiry Skills
1. Ask and seek out answers to questions about objects and events with the assistance of interested adults.

Massachusetts Curriculum Frameworks:
PreK-LS1-1 Compare, using descriptions and drawings, the external body parts of animals and plants and explain functions of some of the observable body parts.
PreK-LS1-4 Use their five senses in their exploration and play to gather information.

Lesson Summary:
Have a small group of children wash their hands and sit at the table. Put different types of lettuce and greens in bowls on the table in front of them. Some examples are: romaine, iceberg, escarole, kale, Boston lettuce, dandelion leaves, red and green leaf, arugula etc. Give each child a fork and let them put a piece of lettuce from each bowl on their plate. Ask the children to smell the lettuce, look at the difference in color and have them taste each one. On a graphing paper document which lettuce the children liked best. Give the children more with a little bit of ranch dressing and let them have it as part of their snack.

Extensions of learning:
What are some differences between the lettuces?
What do they smell like?
What can we use lettuce for?
Which animals do you think like lettuce?
What do the lettuces taste like?
Which do you like best?
Which do you like least?
Adaptations:
Be aware of allergies in the room. Be sure not to give any child anything they may have an allergy to.

Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning
Place direct lighting over work areas and locate art area near bright indirect light to assist children with visual disabilities.
Provide opportunities for interaction with typically developing peers.
Use adaptive equipment and furniture so children can participate in all parts of the curriculum, small and large group activities, circle time, etc., along with their peers

Additional Resources:
“Cool Leaf Lettuce” by Katherine Hengel
“Lettuce Grows on the Ground” by Marc Schoh
Science, Engineering, Mathematics

**Topic:** Transplanting our plants

**Duration:** 30 minutes (ongoing through summer)

**Learning Objectives:**
To gain an understanding about plants and how to keep them growing and healthy
To understand the elements outdoors are different than indoors
To gain an understanding about how to care for plants in an outdoor setting

**Activity Description:**
The children will have the opportunity to take the plants that they have started from seeds in the classroom and plant them outside in the ground.

**Materials:**
- Trowels
- Water
- Plants
- Garden area or raised bed gardening area

**Guidelines for Preschool Learning Experiences:**

**Language**
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.

**Composition**
16. Use their own words or illustrations to describe their experiences, tell imaginative stories, or communicate information about a topic of interest.
20. Generate questions and gather information to answer their questions in various ways.
Number sense

3. Use positional language and ordinal numbers (first, second, third) in everyday activities.

Inquiry Skills

4. Record observations and share ideas through simple forms of representation such as drawings.

Massachusetts Curriculum Frameworks:

Pre-K-ESS2-1 Raise questions and engage in discussions about how different types of local environments provides homes for different kinds of living things.

Pre-K-ESS2-4 Use simple instruments to collect and record data on elements of daily weather, including sun, clouds, wind, snow, rain, and higher or lower temperatures.

Pre-K-ESS2-5 Describe how local weather changes from day to day and over the seasons and recognize patterns in those changes.

Pre-K-ESS2-6 Understand the impact of weather on living things.

MA.PK.CC.C.5 Use comparative language, such as more/less than, equal to, to compare and describe collections of objects.

MA.G.A.1 Identify relative positions of objects in space, and use appropriate language

MA.SL.PK.3 Ask and answer questions in order to seek help, get information, or clarify something that is not understood.

MA.SL.PK.6 Speak audibly and express thoughts, feelings and ideas.

Lesson Summary:

Now that you have plants that have grown from seeds, it is time to transplant them into an outdoor environment. This should happen once the plants have sprouted and are growing too large to be in the pot indoors. Every child that planted should bring their pots outside with an educator. Talk to the children about what a garden is. Ask questions such as; have you ever planted a garden at home? What do you think people plant in gardens? Document the children’s answers. Have the children bring their plant to the gardening area that has been prepared for them. This may be a raised bed or a garden directly in the ground. Give the children a trowel and have them dig a hole deep enough to cover the roots of their plant. After they do this help them wiggle their plant out of the pot it is in. The children will then place their plant, root side in the ground and cover the roots completely with soil. Make sure the stem, leaves and buds or flowers are exposed. Have the children water their plants until it is moist. After all of the plants have been planted have the children draw pictures and dictate what they think their garden is going to look like when it is in full bloom. Talk to the children about how to continue to care for their plants. Explain to the children the different
weather elements and outdoor elements that may impair the growth of the plants.

**Extensions of learning:**
Have you ever planted a garden at home?
What would you like to plant?
What do you think you need to have a healthy garden?

**Adaptations:**
Offer children with sensory integration gloves if they need them.

**Additional Resources:**
“My Unconventional Tips for Transplanting Success in The Garden” by D.L. Simpson
“The Seed Starter Handbook” Nancy Bubel
Science, Engineering, Mathematics

**Topic:** It’s The Same, It’s Different

**Duration:** 30 minutes, small group

**Learning Objectives:**
To gain an understanding that there can be varieties of the same fruits and vegetables
To become familiar with the different varieties of vegetation
To learn through compare and contrast

**Activity Description:**
The children will have the opportunity to compare and contrast many different varieties of tomatoes. The children will taste, them, smell, them see them, touch them and draw them.

**Materials:**
Assortment of tomatoes (squash, oranges, peppers or potatoes)
Heirloom tomatoes
Beefsteak tomatoes
Vine ripe tomatoes
Sunburst tomatoes
Cherry tomatoes
Grape tomatoes
Paper and crayons
Paper plates
Plastic knife

**Guidelines for Preschool Learning Experiences:**

**Language**
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.
4. Engage in play experiences that involve naming and sorting common words into various classifications using general and specific language.

**Composition**
16. Use their own words or illustration to describe their experiences, tell imaginative stories, or communicate information about a topic of interest.
20. Generate questions and gather information to answer their questions in various ways.
Shapes & Spatial Sense
12. Listen to and use comparative words to describe the relationships of objects to one another.

Data Collection & Analysis
15. Organize and draw conclusions from facts they have collected.

Inquiry Skills
1. Ask and seek out answers to questions about objects and events with the assistance of interested adults.
4. Record observations and share ideas through simple forms of representation such as drawings.

The Physical Sciences
18. Manipulate a wide variety of familiar and unfamiliar objects to observe, describe, and compare their properties using appropriate language.

Massachusetts Curriculum Frameworks:
PreK-PS1-3 Differentiate between properties of an object and those of the materials it is made
PreK-LS1-1 Compare, using and descriptions and drawings, the external body parts of animals and plants and explain functions of some of the observable parts
PreK-LS1-4 Use their five senses in their exploration and play to gather information

Lesson Summary:
Have a small group of children sit at a table. Show the children a tomato. As the children tell you what it is put it on the table and allow them to look at it, smell it, touch it, etc. Now take out another kind of tomato, such as heirloom or sunburst (yellow). Ask the children to point out some differences and similarities. Let the children draw what they see. Have a discussion with the children about cross breeding and how one food, such as the tomato can have many different varieties. After this activity, wash the tomatoes, cut them into small pieces with a knife, put them on a paper plate and let the children try them. You can further this activity with the orange family, the pepper family, the squash family and the potato family.

Extensions of Learning:
What can you do with a tomato?
How do you think they make so many different kinds of tomatoes?

Adaptations:
Adaptations for children with Disabilities - taken from Appendix A in Massachusetts Guidelines for Preschool learning
Place direct lighting over work areas and locate art area near bright indirect light to assist children with visual disabilities.
Use special or adaptive devices to increase a child’s level of communication and/or participation.
Arrange the room to encourage language conversations (e.g., tables pulled away from walls so that children sit or stand opposite each other).
Use adaptive equipment and furniture so children can participate in all parts of the curriculum, small and large group activities, circle time, etc., along with their peers
Ensure the classroom space allows for wheelchairs, walkers or other equipment so that children using them can move about the classroom safely and independently.
Additional Resources:
All About Tomatoes by Clive Blazey
Technology, Engineering

**Topic:** Tip Toe through our Garden

**Duration:** 1 hour (2 days to dry)

**Learning Objectives:**
To gain an understanding of how to walk through the garden
To gain an understanding of how to be respectful of the garden and its space
To gain a sense of responsibility for their hard work in the garden

**Activity Description:**
The children will make a stepping stone to place in the garden for people to walk through without harming the plants.

**Materials:**
Flat rocks
Table cloth/tarp
Acrylic paints
Paint brushes

**Guidelines for Preschool Learning Experiences:**

**Language**
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.

**Technology & Engineering**
23. Explore and describe a wide variety of natural and man-made materials through sensory experiences.
History and Social Science
4. Engage in activities that build understanding of words for location and direction.

Visual Arts
18. Explore a variety of age-appropriate materials and media to create two and three-dimensional artwork.

Massachusetts Curriculum Frameworks:

PreK-ESS3-2 Observe and discuss the impact of people’s activities on the local environment

Lesson Summary:
Bring in a bunch of flat rocks to the classroom (enough for each child to have one). You can try to find these outside or you can purchase them from a home improvement store. Let the children choose the one they want to decorate. Give the children acrylic paints. Be sure to have a table cloth or tarp to cover the space they will be working on. Give the children the freedom to decorate this stepping stone how they wish. After the children are done place the stepping stones in a safe area to dry. Once they are dry take the children to the garden area with their stepping stones and create a path through the garden. Let the children take pictures of this and walk along their path. Let the children invite others to join them through their garden walk; this will give them a sense of pride.

Extensions of learning:

Why are we making stepping stones?
Where would you put stepping stones at your own house?

Adaptations:

Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning
Place direct lighting over work areas and locate art area near bright indirect light to assist children with visual disabilities.
Make sure children identify themselves before speaking
Use thick cord taped to the floor to mark children’s personal space
Provide good models of communication (in any language).
Use special or adaptive devices to increase a child’s level of communication and/or participation.
Use a favorite toy, activity, technology, or person to encourage communication and/or participation.
Provide opportunities for interaction with typically developing peers.

**Additional Resources:**

“Stepping Stones” By: Donna Schulze
Science, Math, Engineering

**Topic:** Flower Power Play Dough

**Duration:** 30 minutes to make/48 hours to dry out

**Learning Objectives:**
To explore flowers in imaginative ways
To explore flowers through our five senses

**Activity Description:**
The children will make flower play dough and will have the opportunity to make a keepsake with the dough to take home.

**Materials:**
3 cups flower petals
½ cup flour
1 tablespoon salt
3 tablespoons water

**Guidelines for Preschool Learning Experiences:**

**Language**
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.

**Inquiry Skills**
2. Make predictions about changes in materials or objects based on past experience.
History and Social Science

3. Identify and describe cause and effect as they relate to personal experiences and age-appropriate stories.

Physical Development

8. Strengthen hand grasp and flexibility


Visual Arts

18. Explore a variety of age-appropriate materials and media to create two and three-dimensional artwork.

23. Experiment with the use of texture in artwork.

24. Use basic shapes and forms of different sizes to create artwork.

26. Create artwork from memory or imagination.

Massachusetts Curriculum Frameworks:

**PreK-PS1-1** Raise questions and investigate the differences between solids and liquids and develop awareness that a liquid can become a solid and vice-versa

**PreK-PS1-2** Investigate the natural and human-made objects, describe, compare, sort, and classify objects based on observable physical characteristics, uses and whether something is manufactured or occurs in nature

**PreK-PS1-3** Differentiate between the properties of an object and those of the material of which it is made

**PreK-PS1-4** Recognize through investigation that physical objects can change under different circumstances

**PreK-PS2-2** Through experience, develop awareness of factors that influence whether things stand or fall

**PreK-LS1-4** Use their five senses in their exploration and play to gather information

**MA.PK.MD.B.3** Sort, categorize, and classify objects by more than one attribute. (PreK-PS1-2)

**MA.SL.PK.3** Ask and answer questions in order to seek help, get information, or clarify something that is not understood. (PreK-ESS2-1 and PreK-PS1-1)
Lesson Summary:

Take the children out to the garden to pick flowers from the garden or use a wilted bouquet. Bring the children and the flowers inside to the table. Have the children assist you with plastic knives or their fingers and chop the flowers up very fine. You should yield 3 cups of chopped up flowers. Set them aside. Mix together ½ cup flour, 1 tablespoon salt and 3 tablespoons water in a bowl. It will feel a little dry, but do not add more water. Once this is mixed add in the chopped flower petals and knead the dough until it is mixed thoroughly. Wrap the dough in plastic and refrigerate for 20 minutes. Take it out of the refrigerator and give a divided portion to each individual child. You can double or triple the batch of dough to ensure each child gets enough dough. They can form a keepsake or a sculpture with the dough or just use it as play dough. If the children make something they want to keep, set their item aside with their name on it and let it harden for 48 hours before they take it home.

Extensions of learning:

How does the dough feel?

How does the dough smell?

What else can we put in play dough?

Adaptations:

Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning

Place direct lighting over work areas and locate art area near bright indirect light to assist children with visual disabilities.

Make sure children identify themselves before speaking

Use thick cord taped to the floor to mark children’s personal space

Use art materials that provide texture (e.g., gel paint that dries with a raised surface; tempera paint with sand added); high-contrast paper (light, dark, shiny, sparkling); bold colors that are easy to differentiate.

Ensure the classroom space allows for wheelchairs, walkers or other equipment so that children using them can move about the classroom safely and independently.

Additional Resources:

www.mysmallpotatoes.com
**Science, Math, Technology, Engineering**

**Topic:** Sunflower Surprise

**Duration:** Ongoing from late May/early June

**Learning Objectives:**
- To gain an understanding that flowers and plants can be many different shapes and sizes
- To gain a sense of nature and being involved with it
- To become familiar with estimation
- To gain an understanding that some flowers can be consumed
- To begin to understand the concept of shadows

**Activity Description:**
The children will have the opportunity to learn about and grow sunflowers in their garden.

**Materials:**
- Sunflower seeds
- Place outdoors big enough to make a large circle with sunflowers
- Water
- Organic soil/compost
- Coconut coir
- Sluggo (snail bait)
- Shovels
- Netting

**Guidelines for Preschool Learning Experiences:**

**Language**
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.

3. Communicate personal experiences or interests.

**Reading & Literature**

6. Listen to a wide variety of age appropriate literature read aloud

**Composition**

20. Generate questions and gather information to answer their questions in various ways.

**Number Sense**

3. Use positional language and ordinal numbers (first, second, third) in everyday activities.

**Shapes and Spatial Sense**

11. Explore and identify space, direction, movement, relative position, and size using body movement and concrete objects.

12. Listen to and use comparative words to describe the relationships of objects to one another.

**Measurement**

13. Use estimation in meaningful ways and follow up by verifying the accuracy of estimations.

**Massachusetts Curriculum Frameworks:**

**PreK-PS4-2** Connect daily experience and investigations to demonstrate the relationships between the size and shape of shadows, the objects creating the shadows, and the light source

**PreK-ESS1-2** Observe and use evidence to describe that the sun is in different places in the sky during the day

**PreK-LS3-1** Use observations to explain that young plants and animals are like but not exactly like their parents

**PreK-LS1-2** Recognize that all plants and animals grow and change over time
Lesson Summary:
Read books and talk to the children about sunflowers. Explain the size of them and what their uses are. Design with the children a “sunflower circle”. Draw this out as a blue print for the children and yourself to use as guide. Take the children outside and show them the space they will be planting in. The amount of space you need in the garden depends on the size of the sunflowers that you want to grow. Sunflowers need full sun at least 6-8 hours per day. It is best that you sow the sunflowers directly into the ground and not in a pot. To sow seeds, water your soil, and press seeds 1 inch deep in clumps of 5-6 seeds about 6-8 inches apart. Put the snail bait (sluggo) in a circle around the clumps and cover loosely with netting to protect emerging seedlings from birds or other predators. If the soil is kept moist, seedlings will appear within 5-10 days. When the plants grow to 3 inches, thin them to the most vigorous 3 or 4. When they are a foot tall, thin them to 2, and when they reach 2 feet high, select the best, most vigorous candidate. The reason for this gradual thinning method is to ensure that you are left with at least one good seedling in the event that predators damage any of the others. It is critical to thin back to the best single seedling if you are going for giant sunflowers. Leaving even several seedlings growing too close together will keep you from growing a large sunflower in your garden. Once the sunflowers are in bloom you can add many other activities, such as seed estimation, making bird feeders with the seeds, shadow puppets with the sunflower plants, you can even make a “fairy garden get-a-way” in between the sunflowers depending on the size. Have fun with this!

Extensions of learning:
What are sunflowers?
How big do sunflowers get?
What are sunflowers good for?
What can you do with sunflowers?

Adaptations:
Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning
Use special or adaptive devices to increase a child’s level of communication and/or participation.
Offer children gloves to wear while digging in the soil to plant the plants

Additional Resources:
Sunflower Lifecycle (Scholastic publication)
www.kidsgrowingstrong.com
www.reneesgarden.com
Science, Math, Engineering

**Topic:** Flower Power Potpourri

**Duration:** 3 hours

**Learning Objectives:**

To gain an understanding of how to preserve flowers

To learn how to recycle and reuse flowers in fun, useful ways

**Activity Description:**

The children will have the opportunity to learn about scents, flower preservation and using flowers in many different ways, while making their own potpourri.

**Materials:**

- Flowers
- Sheet pan
- Parchment paper
- Scissors
- Essential oils such as lavender
- Spray bottle
- Citrus fruits (optional) such as lemons, oranges or grapefruit
- Fresh herbs (optional) such as rosemary, lavender or thyme
- Whole spices (optional) such as cinnamon sticks, cloves or all spice

**Guidelines for Preschool Learning Experiences:**

**Language**

1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).

2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.

3. Communicate personal experiences or interests.

**Number Sense**

1. Listen to and say the names of numbers in meaningful contexts.
**Inquiry Skills**

1. Ask and seek out answers to questions about objects and events with the assistance of interested adults.

2. Make predictions about changes in materials or objects based on past experience.

**Visual Arts**

21. Explore how color can convey mood and emotion.

**Massachusetts Curriculum Frameworks:**

**PreK-PS1-2** Investigate the natural and human-made natural and human-made objects, describe, sort, compare and classify objects based on observable physical characteristics, uses, and whether something is manufactured or occurs in nature

**PreK-PS1-4** Recognize through investigation that physical objects and materials can change under different circumstances

**MA.PK.MD.B.3** Sort, categorize, and classify objects by more than one attribute. (PreK-PS1-2)

**Lesson Summary:**

Bring the children outside to pick flowers that are beginning to wilt. Bring the children and the flowers back into the classroom and gather and sort your flowers to use for making the potpourri. You can also go to your local florist and ask them for any flower scraps they may be throwing away. Any kind of flower will work, especially ones that already have strong scents, such as roses. Flowers with small, individual petals work great, or whole heads can be used too. Preheat your oven to 200°F. Cover a sheet tray with parchment paper. Have the children cut or pick the flowers from the stems right below the heads and place them on the tray, or remove individual petals and place them in a single layer on the parchment paper. To add scent to your potpourri, cut and add thin slices of citrus fruits such as oranges, lemons or grapefruit; or tuck in springs of rosemary, lavender, or thyme to the mixture. You can also add whole spices, such as cinnamon sticks, cloves, or allspice. Add 10 to 15 drops of your favorite essential oil, such as lavender, to one tablespoon of water in a small spray bottle, and spray it on the potpourri ingredients. Then put the potpourri into your oven. Dry in the oven for at least two hours, or until the flowers are brittle, but not burnt. When the potpourri is ready, remove from oven and give another spray of essential oil. Once it is room temperature, gently mix the potpourri and place it in a bowl or small satchel. To refresh the scent, just spray with the oil mixture.
Extensions of learning:

What can you do with flowers that are not fresh anymore?

What is potpourri?

What are some things you can use in potpourri?

Adaptations:

*Be sure that you are aware of any allergies the children may have, and try to refrain from that kind of flower or essential oil.

Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning

Place direct lighting over work areas and locate art area near bright indirect light to assist children with visual disabilities.

Use art materials that provide texture

Ensure the classroom space allows for wheelchairs, walkers or other equipment so that children using them can move about the classroom safely and independently
Science, Technology

**Topic:** Why We Love Our Garden (classroom book)

**Duration:** 20 minutes per child

**Learning Objectives:**
- To reflect on the gardening experience thus far
- To feel accomplished in being a part of a long term project
- To gain an understanding of what the parts of a book are

**Activity Description:**

The children will have the opportunity to show their understanding and care for the garden by making a page to a classroom book about the garden they are caring for.

**Materials:**

- Paper
- Colored pencils
- Glue
- Pictures of the garden from a camera
- Book binder of your choice

**Guidelines for Preschool Learning Experiences:**

**Language**

1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).

2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.

3. Communicate personal experiences or interests.

**Composition**

16. Use their own words or illustrations to describe their experiences, tell imaginative stories, or communicate information about a topic of interest.
Massachusetts Curriculum Frameworks:

**PreK-LS1-2** Recognize that all plants and animals grow and change over time

**PreK-LS2-3** Give examples from the local environment oh how animals and plants are dependent on one another to meet their basic needs

**PreK-LS3-2** Use observations to recognize differences and similarities among themselves and friends

**Lesson Summary:**

Give the children paper and colored pencils. Ask them to write their name and draw a picture of the garden that they have been working on outside. Have on the table glue sticks and real pictures of the garden and let them glue one to their picture. Ask them to dictate why they love the garden or why the garden is so important to them. After each child has done a picture put them together as a book. Read it to the children during a circle time and put it on the book shelf for them to look at independently or share with their families.

**Extensions of learning:**

What is an author?

What is an illustrator?

What have we planted in the garden?

Why did we plant this garden and start a greenhouse?

**Adaptations:**

**Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning**

Place direct lighting over work areas and locate art area near bright indirect light to assist children with visual disabilities.

Use special or adaptive devices to increase a child’s level of communication and/or participation.

Use a favorite toy, activity, technology, or person to encourage communication and/or participation.

Provide opportunities for interaction with typically developing peers.
Science, Technology

Topic: Garden Favorites

Duration: 30 minutes (10 minutes first part/20 minutes second part)

Learning Objectives:
To gain an understanding of what is in a garden
To understand what taste buds are
To gain an understanding of what others like and dislike
To learn to share information about themselves with others

Activity Description:
The children will have the opportunity to be a part of making a classroom book to share with others. They will also be responsible for picture taking and using their own words to describe how they feel.

Materials:
Garden
Camera
Pictures developed or printed from camera
Paper
Glue
Writing utensils
Book binder/pipe cleaners or a book ring

Guidelines for Preschool Learning Experiences:

Language
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.
5. Listen to and use formal and informal language.
**Reading & Literature**
10. Engage actively in read-aloud activities by asking questions, offering ideas, predicting or retelling important parts of a story or informational book.

**Composition**
16. Use their own words or illustrations to describe their experiences, tell imaginative stories, or communicate information about a topic of interest.

**Shapes & Spatial Sense**
12. Listen to and use comparative words to describe the relationships of objects to one another.

**Data Collection & Analysis**
15. Organize and draw conclusions from facts they have collected.

**Inquiry Skills**
4. Record observations and share ideas through simple forms of representation such as drawings

**Visual Arts**
18. Explore a variety of age-appropriate materials and media to create two and three-dimensional artwork.

19. Observe the safe and appropriate use and care of art materials.

27. Choose artwork for display in the classroom, school or community or for a personal book, class book or portfolio, and explain why they chose it.

**Massachusetts Curriculum Frameworks:**

**PreK-LS3-2** Use observation to recognize differences and similarities among themselves and their friends.

**Lesson Summary:**

Take only 2 or 3 children to the garden at one time. Have the children look around the garden to familiarize themselves with what is in there. Then one at a time let the children take a camera and go to their favorite item in the garden. Then have the children take a photo or two of their favorite fruit or veggie in the garden. If their favorite is not in the garden have the child draw it once inside. After all the children have and a chance to take a picture print the pictures out. Be sure to write down each child’s choice so that they receive the correct pictures when they are printed. Once each child has their pictures give them a piece of paper and have them glue their pictures to the paper. Then ask them to tell you why they love that item and dictate this on to the paper. When everyone is finished put the papers together into a book so that the children can look back and share with their parents and peers.
Extensions of learning:

What veggie/fruit is your favorite?
What can you cook with this?
How does it grow?

Adaptations:

Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning

Be sure children identify themselves before speaking
Use thick cord taped to the floor to mark children’s personal space
Provide good models of communication (in any language).
Use special or adaptive devices to increase a child’s level of communication and/or participation.
Provide opportunities for interaction with typically developing peers.

Additional Resources:

The Vegetables We Eat By Gail Gibbons
Science, Engineering

Topic: Gardening Station

Duration: (Set up approximately 1 hour) From spring ongoing through summer

Learning Objectives:
To gain a sense of control and responsibility while gardening on their own
To gain an understanding of gardening through exploration and experimentation

Activity Description:
This activity will be an individualized gardening station in the outdoor play area of the center. The children will have the opportunity to garden and create with the tools for gardening and their imagination and curiosity.

Materials:
Stones, rocks or a small see through fence
Soil
Planting pots
Trowels
Small shovels
Gardening gloves
Watering can
Water
Seeds

Guidelines for Preschool Learning Experiences:

Language
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.

**Inquiry Skills**

2. Make predictions about changes in materials or objects based on past experience.

**Earth and Space Sciences**

5. Compare and contrast natural materials such as water, rocks, soil, and living organisms using descriptive language

**Life Sciences**

10. Observe and identify the characteristics and needs of living things: humans, animals, and plants.

11. Investigate, describe, and compare the characteristics that differentiate living from non-living things.

12. Observe and describe plants, insects, and animals as they go through predictable life cycles.

**Living things and their Environment**

16. Observe and describe seasonal changes in plants, animals and their personal lives.

17. Observe and describe how natural habitats provide for the basic needs of plants and animals with respect to shelter, food, water, air, and light.

**Massachusetts Curriculum Frameworks:**

**PeK-PS1-4** Recognize through investigation that physical objects and materials can change under different circumstances

**PreK-LS1-2** Recognize that all plants and animals grow and change over time

**PreK-LS2-2** Using evidence from the local environment explain how familiar plants and animals meet their needs where they live

**Lesson Summary:**

In the play ground area make a small sectioned off area in the corner or next to the garden for the children to have as an individual gardening center. Surround the area with bricks or stones, or even a small see through fence. The amount of space you want to use for this can vary on your preference; it does not have to be big. Put soil all around, buckets, pots, trowels, small shovels, plants, containers of seed, watering cans filled with water, gardening gloves etc. The children will have the opportunity to go into their gardening center and experiment with planting during outdoor activities and
play. Leave this area open and in use throughout the spring and summer season and see what comes of it! Limit the amount of children that can go in there at once, 1-2. Let the children explore and have fun! Remember it is a learning experience.

**Extensions of learning:**
What do you want in the planting station?
What happened to the plants?
What did you learn from planting?

**Adaptations:**
This is an optional activity, not every child is going to want to participate.

**Additional Resources:**
Fine Gardening Magazine
www.organicgardening.com
Science, Mathematics

**Topic:** Hey Hey, What’s it weigh?

**Duration:** 10 minutes

**Learning Objectives:**
To gain an understanding of scales and measures
To become familiar with key words, heavy, light, more, less
To learn that vegetables weigh different weights even if it is the same vegetable

**Activity Description:**
The children will have the opportunity to harvest vegetables from the garden. They will also estimate and investigate weights of familiar and unfamiliar vegetables.

**Materials:**
Paper
Crayons
Vegetables from the garden
Scale
Balance scale

**Guidelines for Preschool Learning Experiences:**

**Language**
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.
**Reading & Literature**
6. Listen to a wide variety of age appropriate literature read aloud.

**Measurement**
13. Use estimation in meaningful ways and follow up by verifying the accuracy of estimations.
14. Use nonstandard units to measure length, weight, and amount of content in familiar objects.

**Data Collection & Analysis**
15. Organize and draw conclusions from facts they have collected.

**Massachusetts Curriculum Frameworks:**

**PreK-PS1-4** Recognize through investigation that physical objects and materials can change under different circumstances

**Lesson Summary:**
Bring the children out to the garden and pick some vegetables. Bring the vegetables in to the classroom and introduce a scale to the children. Talk to the children about a scale and what it does. Give the children a piece of paper that has been folded in half. On one half of the paper let the children draw the vegetable that they are going to weigh and let them estimate what they think the weight will be. After they have done this let them weigh their vegetable. Assist them in reading the scale if they need help. Let the children compare weights of different vegetables on a balance scale. Have the children write the actual weight of the vegetable on their paper.

**Extensions of learning:**
What do you think the heaviest vegetable is?
What do you think the lightest vegetable is?
What is a scale?
What is a balance scale?
Why do we weigh things?

**Adaptations:**
Give the children gloves to handle the vegetables if they have sensory integration.

**Additional Resources:**
“How to Grow a Giant Vegetable” by Bernard Lavery
“Vegetables and Fun” by Megs Var
“The Vegetables We Eat” by Gail Gibbons
Science, Math

**Topic:** I Can Eat a Rainbow

**Duration:** 20 minutes in small groups

**Learning Objectives:**
To gain an understanding of the many colors of fruits and vegetables
To learn color recognition
To make connections of color in different elements and aspects of life

**Activity Description:**
The children will explore color and rainbows, when they make a rainbow collage out of pictures of the fruits and vegetables that they eat.

**Materials:**
Scissors
Paper
Markers
Magazines with food pictures
Glue

**Guidelines for Preschool Learning Experiences:**

**Language**
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.

**Patterns & Relations**
7. Explore and describe a wide variety of concrete objects by their attributes.
8. Sort, categorize, or classify objects by more than one attribute.

**Earth and Space Sciences**

8. Explore sunlight and shadows and describe the effects of the sun or sunlight.

**Massachusetts Curriculum Frameworks:**

**PreK-ESS2-6** Understand the impact of weather on living things

**PreK-PS1-4** Recognize through investigation that physical objects and materials can change under different circumstances

**Lesson Summary:**

Have a small group of four children sit at a table. Have the table prepared with scissors, paper of all colors, glue, markers and magazines for the children to look through. Talk to the children about all the different types of vegetation there is and have the children think about the colors. Have the children dictate to you the colors that are in a rainbow. Now give the children the opportunity to look through magazines or make their own fruits and vegetables with paper to create an “I can eat a rainbow” picture. They can glue their items on to a large piece of construction paper. Offer them books to look through if they need help finding these items.

**Extensions of learning:**

What are the colors in a rainbow?
What makes a rainbow?
Name some fruits and vegetables that are the same colors?
What’s your favorite color?
What fruit or vegetable is the same color?
Is that your favorite fruit or vegetable?

**Adaptations:**

**Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning**

Place direct lighting over work areas and locate art area near bright indirect light to assist children with visual disabilities.

Arrange the room to encourage language conversations (e.g., tables pulled away from walls so that children sit or stand opposite each other).

Use adaptive equipment and furniture so children can participate in all parts of the curriculum, small and large group activities, circle time, etc., along with their peers
Ensure the classroom space allows for wheelchairs, walkers or other equipment so that children using them can move about the classroom safely and independently

**Additional Resources:**

“I Can Eat a Rainbow” by Annabel Karmel
Science, Engineering

**Topic:** Imagine that Pumpkin Patch

**Duration:** 30 minutes

**Learning Objectives:**
- To gain an understanding about pumpkins and their differences
- To learn about the different things pumpkins can be used for
- To gain an understanding about how pumpkins grow

**Activity Description:**
The children will roll, examine and compare pumpkins through a fun, hands on painting and learning experience.

**Materials:**
- Pumpkins of different shapes and sizes
- Orange paint
- Green paint
- Long roll of paper

**Guidelines for Preschool Learning Experiences:**

**Language**
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).

2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.

3. Communicate personal experiences or interests.

**Reading & Literature**
6. Listen to a wide variety of age appropriate literature read aloud

15. Listen to, recognize, and use a broad vocabulary of sensory words.
Composition

16. Use their own words or illustrations to describe their experiences, tell imaginative stories, or communicate information about a topic of interest.

Shapes & Spatial Sense

10. Investigate and identify materials of various shapes, using appropriate language.

11. Explore and identify space, direction, movement, relative position, and size using body movement and concrete objects.

12. Listen to and use comparative words to describe the relationships of objects to one another.

Visual Arts

18. Explore a variety of age-appropriate materials and media to create two and three-dimensional artwork.

Massachusetts Curriculum Frameworks:

PreK-LS1-2 Recognize that all plants and animals can change over time

PreK-PS2-1 Using evidence, discuss ideas about what is making something move the way it does and how some movements can be controlled.

Lesson Summary:

Roll out a long sheet of paper on the floor or place a line of papers connecting to make a long sheet of paper. Set on one end of the paper a few different sizes and shapes of pumpkins. Have a plate of orange and a plate of green paints. Two at a time let the children pick from the pumpkins and dip them in the paint. See what the children do next without giving instructions. Some children may stamp with them; some may roll them down the length of the paper. Have fun with this!

Extensions of learning:

What do you know about pumpkins?

What makes pumpkins different from one another?

What can you do with pumpkins?

How do pumpkins grow?
Adaptations:

Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning

Place direct lighting over work areas and locate art area near bright indirect light to assist children with visual disabilities.

Give children gloves or a paintbrush if they do not want to touch the paint

Additional Resources:

“Seed, Sprout, Pumpkin, Pie” by Jill Esbaum

“Big Pumpkin” by Erica Silverman

“From Seed to Pumpkin” by Wendy Pfeffer
Science

**Topic:** It’s good for you too!!

**Duration:** 20 minute large group

**Learning Objectives:**
To gain an understanding about the health benefits of fruits and vegetables
To demonstrate recognition of fruits and vegetables

**Activity Description:**
This activity will touch upon fruits and vegetables and what they are good for. The children will experience through a hand on activity the benefits of healthy eating.

**Materials:**
Fruits and vegetables such as, onion, tomatoes, garlic, carrots, etc
Small boxes (tissue box) One for each vegetable you will talk about
Items to represent the health benefits of each fruit and vegetable that you choose

**Guidelines for Preschool Learning Experiences:**

**Language**
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.
4. Engage in play experiences that involve naming and sorting common words into various classifications using general and specific language.

**Reading & Literature**
15. Listen to, recognize, and use a broad vocabulary of sensory words.
Patterns & Relations
7. Explore and describe a wide variety of concrete objects by their attributes.

Inquiry Skills
1. Ask and seek out answers to questions about objects and events with the assistance of interested adults.

Massachusetts Curriculum Frameworks:
PreK-LS2-3 Give examples from the local environment of how animals and plants are dependent on one another to meet their basic needs

Lesson Summary:
Sit all the children down in a circle time setting. Have with you a tomato, onion, carrot, broccoli, etc. With each item have a small tissue box with items in it that represent what the vegetable or fruit is good for.

Example: Tomato: eyes, skin, heart. Have in the small box a pair of glasses, a picture of a heart or a cut out heart, and a picture of a person’s skin. Let the children take turns pulling from the boxes and telling the class what they discover. You can do this with any fruit or vegetable as long as you research what it is good for.

After the activity is over you can cut up the fruits and vegetables for the children to eat for a snack or a tasting.

Extensions of learning:
What vegetables do you see?
Why do you think they are good for you?
What does the word healthy mean?
What is a vitamin? Mineral?

Adaptations:
Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning
Place direct lighting over work areas and locate art area near bright indirect light to assist children with visual disabilities.
Use visual pictures or symbols to illustrate the words to songs.
Use a favorite toy, activity, technology, or person to encourage communication and/or participation.

Additional Resources:
www.fruitrhymes.com
www.fruitsandveggiesmorematters.com
Science, Engineering

**Topic:** Frosty Frozen

**Duration:** 20-30 minutes (late fall *first frost*)

**Learning Objectives:**
To gain an understanding about frost
To further understand weather and the affects it has on vegetation

**Activity Description:**
The children will have the opportunity to investigate frost bitten vegetation. They will examine the difference between healthy and frost bitten plants.

**Materials:**
- Magnifying glasses
- Paper and writing utensils

**Guidelines for Preschool Learning Experiences:**

**Language**
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.

**Composition**
20. Generate questions and gather information to answer their questions in various ways.

**Data Collection & Analysis**
15. Organize and draw conclusions from facts they have collected.
Inquiry Skills
1. Ask and seek out answers to questions about objects and events with the assistance of interested adults.
4. Record observations and share ideas through simple forms of representation such as drawings.

Earth and Space Sciences
7. Identify the characteristics of local weather based on first-hand observations.

Living Things & Their Environment
16. Observe and describe seasonal changes in plants, animals and their personal lives.

Massachusetts Curriculum Frameworks:
PreK-PS1-1 Raise questions and investigate the difference between liquids and solids and develop awareness that a liquid can become a solid and vice versa.
PreK-PS1-4 Recognize through investigation that physical objects and materials can change under different circumstances
Prek-ESS2-5 Describe how local weather changes from day to day and over the seasons and recognize patterns in those changes
PreK-ESS2-6 Understand the impact of weather on living things
MA.SL.PK.3 Ask and answer questions in order to seek help, get information, or clarify something that is not understood. (PreK-ESS2-1and PreK-PS1-1)

Lesson Summary:
After the first frost take the children outside and investigate. Bring out magnifying glasses so the children can look closely at leaves of plants and the vegetation. Have the children describe what has happened and why. Make a discussion board and let the children dictate their findings. Let them draw the difference between healthy vegetation and frost bit vegetation. Let the children feel the leaves. Bring in a couple of leaves and see what happens as the frost melts off of the leaves.

Extensions of learning:
What effects does weather have on plants?
What do you see that has changed in our garden?
Adaptations:

Adaptations for children with Disabilities - taken from Appendix A in Massachusetts Guidelines for Preschool learning

Make sure children identify themselves before speaking

Provide good models of communication (in any language).

Use special or adaptive devices to increase a child’s level of communication and/or participation.

Additional Resources:

www.farmersalmanac.com
Science, Math

**Topic:** Like it, Love it, Try it again...

**Duration:** 20 minutes

**Learning Objectives:**
To gain an understanding of vegetables and our taste buds.
To be introduced to new vegetables and new experiences with vegetables.
To gain an understanding of how to harvest things they have grown themselves.
To broaden their self-help skills such as, cutting and food preparation.

**Activity description:**
We will be having a taste test in this activity. The children will have the opportunity to help cut and prepare vegetables for a taste test.

**Materials:**
- Bowl
- Plastic knifes
- Paper plates
- Water (for washing)
- Napkins
- Assortment of vegetables: (tomatoes, cucumbers, peppers, scallion, radish, squash, beans, etc.)

**Guidelines for Preschool Learning Experiences:**

**Language**
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.
Number Sense
3. Use positional language and ordinal numbers (first, second, third) in everyday activities.

Inquiry Skills
1. Ask and seek out answers to questions about objects and events with the assistance of interested adults.

Reading and Literature
13. Relate themes and information in books to personal experiences.

Number sense
1. Listen to and say the names of numbers in meaningful contexts.

Patterns and Relations:
8. Sort, categorize, or classify objects by more than one attribute.

Shapes and Spatial Sense:
12. Listen to and use comparative words to describe the relationships of objects to one another.

Massachusetts Curriculum Frameworks:
PreK-ESS3-1 Engage in discussion and raise questions using examples about local resources humans use to meet their needs.
MA.SL.PK.3 Ask and answer questions in order to seek help, get information, or clarify something that is not understood.
MA.SL.PK.6 Speak audibly and express thoughts, feelings, and ideas.
PreK-PS1-3 Differentiate between the properties of an object and those of materials of which it is made
PreK-LS1-2 Recognize that all plants and animals grow and change over time
PreK-LS1-4 Use their five senses in their exploration and play to gather information
PreK-LS3-2 Use observation to recognize differences and similarities among themselves and others

Lesson Summary:
Take a walk out to the garden with four children at a time and observe all of the different kinds of vegetables. Look to see which vegetables are ripe and ready to be picked. Let the children pick any vegetables that they see that are ripe and ready for picking. Have the children place the vegetables in a bowl for easy carrying. Take the children and the bowl of vegetables back into the classroom. Have the children sit at the table and allow the children to look at the vegetables and observe the similarities.
and differences. Have the children wash their hands. After the children’s hands are clean let the children wash the vegetables. Give each child a plate and a plastic knife. Also give each child a vegetable or a piece of a vegetable to cut up into bite sized pieces. This is a good opportunity for the children to count the pieces they have cut. There should be one piece of each vegetable for each child. Once all of the vegetables are cut up give the children a piece of each vegetable to try. As each child tastes these vegetables use documentation and pictures to determine if the children like it, love it, or need to try it again someday. Make a classroom graph that says: like it, love it and try it again at the top with each child’s name on the left side. On the bottom of the paper have the name of each vegetable the children tasted. If the child loved it use a smile face :). If the child liked it use a face with a straight line smile :/. If the child didn’t like it and needs to try it again someday use a frown :(, This is an easy way for the children to read the graph, as well as the parents or teachers.

**Extensions of learning:**

What do you think the vegetable will taste like?

Do you like the vegetable?

What is harvesting?

What kind of vegetables do you like?

**Adaptations:**

Give some assistance to the children that are nervous about using a knife by themselves.

Give the children that really do not want to try the vegetables something to dip them in.

You can also take all the left over vegetables and mix them together into a summer salad and let the children enjoy a healthy snack after the taste test.

**Additional Resources:**

“Stone Soup” by Ann McGovern

“The Vegetables We Eat” by Gail Gibbons

Science, Technology, Engineering, Mathematics

**Topic:** Veggie Measures

**Duration:** 30 minutes

**Learning Objectives:**
To gain an understanding that not all vegetables are the same
To understand that vegetation grows at different rates.
To gain an understanding of the different elements and the effect it has on vegetation
To gain familiarity with reading measurements

**Activity Description:**
The children will have the opportunity to measure vegetables from the garden and discover the differences of those vegetables. They will use different means of measurement.

**Materials:**
Vegetables that are the same but of different sizes (ex. Zucchinis cucumbers Peppers, green beans, etc)
Ruler
Tape measure
Paper
Coloring utensils

**Guidelines for Preschool Learning Experiences:**

**Language**
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.
Composition
20. Generate questions and gather information to answer their questions in various ways.

Number Sense
1. Listen to and say the names of numbers in meaningful contexts.
2. Connect many kinds/quantities of concrete objects and actions to numbers.
4. Use concrete objects to solve simple addition and subtraction problems using comparative language (more than, fewer than, same number of).

Patterns and Relations
7. Explore and describe a wide variety of concrete objects by their attributes.

Shapes and Spatial Sense
12. Listen to and use comparative words to describe the relationships of objects to one another.

Data Collection and Analysis
15. Organize and draw conclusions from facts they have collected.

Inquiry Skills
3. Identify and use simple tools appropriately to extend observations.
4. Record observations and share ideas through simple forms of representation such as drawings.

Technology and Engineering
24. Demonstrate and explain the safe and proper use of tools and materials.

Massachusetts Curriculum Frameworks:
PreK-LS3-1 Use observation to explain that young plants and animals are like but not exactly like their parents
PreK-LS1-2 Recognize that all plants and animals change over time
Lesson Summary:
Put vegetables on the table that are the same, but different sizes. Give the children different measuring tools (ruler, measuring tape) and have them measure the vegetables. Document the children’s findings. Let the children measure the length and width or circumference. Give the children coloring utensils and a piece of paper and let them draw the different sizes of the vegetables.

Extensions of learning:
Why are some vegetables bigger, but they are the same vegetable?
How big do you think it would grow if we never picked it?

Adaptations:
Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning
Place direct lighting over work areas and locate art area near bright indirect light to assist children with visual disabilities.
Make sure children identify themselves before speaking
Use thick cord taped to the floor to mark children’s personal space
Use special or adaptive devices to increase a child’s level of communication and/or participation.
Provide opportunities for interaction with typically developing peers.
Arrange the room to encourage language conversations (e.g., tables pulled away from walls so that children sit or stand opposite each other).
Use adaptive equipment and furniture so children can participate in all parts of the curriculum, small and large group activities, circle time, etc., along with their peers
Ensure the classroom space allows for wheelchairs, walkers or other equipment so that children using them can move about the classroom safely and independently
Science

**Topic:** Veggie Share

**Duration:** Overnight with family

**Learning Objectives:**
- To gain an understanding of what it feels like to share
- To share a school experience at home with family
- To demonstrate confidence and self esteem while introducing something to their family
- To demonstrate responsibility in returning the findings of the experience to the class
- To feel a sense of ownership and accomplishment through sharing the products of the garden with others

**Activity Description:**
This is an activity for the children to do at home. The children will share something from the garden with their family and come to school with some information on the experience to share with the classroom.

**Materials:**

- A bag
- A vegetable from the garden
- Directions sheet for parents
- Paper for the children to record data on
- Writing utensil

**Guidelines for Preschool Learning Experiences:**

**Language**

1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).

2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.

Data Collection & Analysis

15. Organize and draw conclusions from facts they have collected.

Physical Development

13. Discuss nutritious meals and snacks and the difference between junk food and healthy food.

Massachusetts Curriculum Frameworks:

PreK-LS3-2 Use observation to recognize differences and similarities among themselves and their friends

PreK-LS1-4 Use their five senses in their exploration and play to gather information

Lesson Summary:

Take the children out to the garden and let them choose a vegetable. Have each child bring their vegetable in and sit in a circle time. Record what each child chose. Explain to the children that they are going to have a big responsibility with this project. Let the children know that they are to take the vegetable home, sit down with their families and do a taste test sharing. Give each child a bag with directions for the adult in the home to follow and a piece of paper that says, “What did you find?” Also have in the bag a writing utensil for them to use at home. Let them put their vegetable in the bag as well. Tell the children that they will be responsible for sharing with the class, how their family members liked the vegetable.

The next day when the children sit down for circle time, allow them to take turns sharing with the class how their taste test at home went. Record this information and post it for the children and families to see.

Questions to ask:

What did you do to the vegetable before you ate it?

Who liked it?

Who didn’t like it?

If you could choose a different vegetable to try next time what would it be?

Adaptations:

Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning

Use thick cord taped to the floor to mark children’s personal space if needed in a circle setting.

Provide good models of communication (in any language).
Use a favorite toy, activity, technology, or person to encourage communication and/or participation.

Provide opportunities for interaction with typically developing peers.

Use adaptive equipment and furniture so children can participate in all parts of the curriculum, small and large group activities, circle time, etc., along with their peers.

Ensure the classroom space allows for wheelchairs, walkers or other equipment so that children using them can move about the classroom safely and independently.
Science, Math, Technology, Engineering

**Topic:** We See Weeds

**Duration:** 30 minutes

**Learning Objectives:**
To gain an understanding about the difference between a plant and a weed
To gain a hands on experience in the garden
To gain a feeling of responsibility and ownership while participating in the weeding process

**Activity Description:**
The children will have the opportunity to learn about weeds and what is harmful to a garden by weeding the garden with the assistance of a knowledgeable educator.

**Materials:**
Gloves
Camera
Small rakes
A bucket
A compost pile

**Guidelines for Preschool Learning Experiences:**

**Language**
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.

**Patterns & Relations**
8. Sort, categorize, or classify objects by more than one attribute.
Shapes & Spatial Sense
12. Listen to and use comparative words to describe the relationships of objects to one another.

Inquiry Skills
1. Ask and seek out answers to questions about objects and events with the assistance of interested adults.

Technology & Engineering
24. Demonstrate and explain the safe and proper use of tools and materials.

Physical Development
8. Strengthen hand grasp and flexibility

Massachusetts Curriculum Frameworks:
PreK-PS4-1 Engage in discussion/argument during and after investigations
PreK-ESS2-1 Observe and ask questions about observable phenomena
MA.SL.PK.3 Ask and answer questions in order to get information, or clarify something that is not understood
MA.SL.PK.6 Speak audibly and express thoughts, feelings and ideas

Lesson Summary:
Take a small group of children to the garden. Take pictures of the garden before weeding. Have the children put on gloves and help with the weeding of the designated area in garden. Offer the children small rakes to help pull out the weeds. Make sure to tell the children if they are unsure if a something is a weed or a plant they should ask. Have a bucket available for the children to put the weeds in. Take pictures while the children are weeding and also once the weeding is done. You can print the pictures and make a flip book or a progression poster for the children to look at and see what all their hard work did for the garden. This will also show a progression of before, during and after for the children to see their hard work. After the weeding experience is done take the bucket of weeds to the composter or a compost pile. The weeds can go into the compost.

Extensions of learning:
What is a weed?
How do you think weeds grow?
Why do you think we need to weed a garden?
Adaptations:

Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning.

Use special or adaptive devices to increase a child’s level of communication and/or participation.

Use a favorite toy, activity, technology, or person to encourage communication and/or participation.

Provide opportunities for interaction with typically developing peers.

Use a variety of symbols (tactual symbols, objects symbols

Use adaptive equipment and furniture so children can participate in all parts of the curriculum, small and large group activities, circle time, etc., along with their peers

Additional Resources:

“In My Garden” by Helen and Kelly Oechsli
Science, Technology, Engineering

**Topic:** Greenhouse to go

**Duration:** 10 minutes to make 10 minutes to prepare and 1+ week to grow

**Learning Objectives:**
- To gain an understanding about how a greenhouse works
- To learn about caring for growing living things
- To begin to understand the care that goes into a greenhouse

**Activity Description:**

The children will have the opportunity to make their own small greenhouse with recycled bottles. This will give them an up close view of how the greenhouse works in a larger scale.

**Materials:**

- 2 liter bottle (one for each child)
- Soil
- Water
- Deli container
- Seeds

**Guidelines for Preschool Learning Experiences:**

**Language**

1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.

**Inquiry Skills**

2. Make predictions about changes in materials or objects based on past experience.
3. Identify and use simple tools appropriately to extend observations.
Life Sciences
12. Observe and describe plants, insects, and animals as they go through predictable life cycles.

Living Things & Their Environment
17. Observe and describe how natural habitats provide for the basic needs of plants and animals with respect to shelter, food, water, air, and light.

Massachusetts Curriculum Frameworks:
PreK-LS1-2 Recognize that plants and animals grow and change over time
PreK-LS2-2 Using evidence from the local environment explain how familiar plants and animals meet their needs where they live

Lesson Summary:
Have a 2 liter bottle cut in half and a deli container for each child. Cut the 2 liter bottle in half with a pair of sharp scissors before giving it to the children. Have the children take the top of the bottle, flip it upside down and put it inside the bottom of the 2 liter bottle. Keep the cap loosely on the neck of the bottle. Let the children put soil in the bottle and let them choose a type of seed. Have the children make a small hole with their finger in the soil and then drop the seed in the hole. Cover the seed with a little more soil. The children can put enough water on top of the soil to make the soil moist. After the soil is moist have the children put the deli container on top of the bottle as a cover. Be sure to poke a few holes in the bottom of the deli container for ventilation. You should see the seed begin to grow within a week or so.

Extensions of learning:
How is this like a greenhouse?
What is a propagator?
When is it good to use a greenhouse?

Adaptations:
Give the children with sensory integration gloves or a small shovel to handle the soil.

Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning
Place direct lighting over work areas and locate art area near bright indirect light to assist children with visual disabilities.
Use adaptive equipment and furniture so children can participate in all parts of the curriculum, small and large group activities, circle time, etc., along with their peers. Ensure the classroom space allows for wheelchairs, walkers or other equipment so that children using them can move about the classroom safely and independently.

Additional Resources:

www.flickr.com
Engineering

**Topic:** Exploring the Greenhouse

**Duration:** 30 minutes to 1 hour

**Learning Objectives:**
To familiarize one’s self with a greenhouse
To gain an understanding for measurements
To introduce the study of architecture

**Activity Description:**
The children will have the opportunity to explore, measure and familiarize themselves with the greenhouse.

**Materials:**
Pictures from camera
Paper
Coloring utensils
Tape measures
Yard sticks

**Guidelines for Preschool Learning Experiences:**

**Language**
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.
4. Listen to and use formal and informal language.
Measurement
14. Use nonstandard units to measure length, weight, and amount of content in familiar objects.

Visual Arts
26. Create artwork from memory or imagination.

Massachusetts Curriculum Frameworks:

PreK-PS2-2 Through experience, develop awareness of factors that influence whether things stand or fall

PreK-PS1-2 Investigate natural and human-made objects to describe, compare, sort, and classify objects based on observable physical characteristics, uses and whether something is manufactured or occurs in nature

MA.PK.MD.A.2 Compare the attributes of length and weight for two objects, including longer/shorter, same length; heavier/lighter, same weight; holds more/less, holds the same amount

Lesson Summary:
Give the children opportunities to watch the greenhouse being built. Let them take pictures and ask questions. Write down their questions and come back to them when the greenhouse is finished being built and they can explore it. Once the building process is finished, take small groups of children to the greenhouse. Let the children walk around it, inside it, measure it etc. Talk about the questions they asked and see if they are able to answer them through investigation. Let the children sit around the greenhouse and “blueprint” or draw it.

Extensions of learning:
What is a greenhouse?
What should we put in our greenhouse?
How is a greenhouse helpful to the environment?

Adaptations:

Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning
Provide good models of communication (in any language).
Use special or adaptive devices to increase a child’s level of communication and/or participation.

Additional Resources:
www.gardenguides.com
Science, Engineering

Topic: Greenhouse Effects

Duration: 15 minutes (small group)

Learning Objectives:
To gain an understanding about how the air in the greenhouse works
To gain an understanding about how a thermometer works

Activity Description:
The children will experiment with thermometers to further understand how a greenhouse works.

Materials:
2 small thermometers
Paper
Pen or pencil
1 jar or other clear container
1 clock or watch
Access to a sunny area to perform the experiment, inside or outside

Guidelines for Preschool Learning Experiences:

Language
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.

Composition
16. Use their own words or illustrations to describe their experiences, tell imaginative stories, or communicate information about a topic of interest.
**Number Sense**

1. Listen to and say the names of numbers in meaningful contexts.

2. Connect many kinds/quantities of concrete objects and actions to numbers.

**Shapes & Spatial Sense**

12. Listen to and use comparative words to describe the relationships of objects to one another.

**Measurement**

13. Use estimation in meaningful ways and follow up by verifying the accuracy of estimations.

**Data Collection & Analysis**

15. Organize and draw conclusions from facts they have collected.

**Inquiry Skills**

2. Make predictions about changes in materials or objects based on past experience.

4. Record observations and share ideas through simple forms of representation such as drawings.

**Massachusetts Curriculum Frameworks:**

**PreK-PS1-4** Recognize through investigation that physical objects and materials can change under different circumstances

**PreK-ESS2-6** Understand the impact of weather on living things

**Lesson Summary:**

Have the children place both thermometers in direct sunlight. Wait about three minutes before reading the thermometers to give them time to adjust to the temperature. Have the children read the number on each thermometer and write it down or dictate it to you. Create two columns, one for thermometer A and one for B. After three minutes ask the children to read both thermometers and record the temperatures again. Now, turn the jar upside down and place it over one of the thermometers so the jar is completely covering it. Once every minute for 10 minutes record the readings of both thermometers without touching them. After the 10 minutes look at the temperature changes with the children. How did the temperature inside the jar change
compared to the other one? The air over the exposed thermometer is constantly changing, constantly mixing with cooler air. While inside the jar the air is trapped and can't circulate, it simply gets warmer and warmer as the sunlight heats it up. This is similar to the way a greenhouse works, where solar energy (light) comes in and becomes thermal energy (heat) that can't escape back out through the glass house.

**Extensions of learning:**

Why do you think the air is hotter inside if the jar?

How does this happen inside of the greenhouse?

How does the warmer air help the plants grow?

**Additional Resources:**

www.123greenhousegardening.com
Science, Mathematics, Engineering

**Topic:** Greenhouse Go!

**Duration:** 30-60 minutes group of 4-5 children

**Learning Objectives:**
To gain an understanding of a greenhouse and what a greenhouse does
To become familiar with gardening and the benefits gardening offers
To explore the concept of a greenhouse through imagination and play

**Materials:**
Blocks
Toy people
Toy animals
Paper
Crayons
Camera
*(Other items the children may want to add)*

**Guidelines for Preschool Learning Experiences:**

**Language**

1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).

2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.

3. Communicate personal experiences or interests.

4. Engage in play experiences that involve naming and sorting common words into various classifications using general and specific language.
**Reading & Literature**

6. Listen to a wide variety of age appropriate literature read aloud.

13. Relate themes and information in books to personal experiences.

**Composition**

16. Use their own words or illustrations to describe their experiences, tell imaginative stories, or communicate information about a topic of interest.

**Number Sense**

4. Use concrete objects to solve simple addition and subtraction problems using comparative language (more than, fewer than, same number of).

**Patterns & Relations**

7. Explore and describe a wide variety of concrete objects by their attributes.

8. Sort, categorize, or classify objects by more than one attribute.

**Physical Development**

5. Use both sides of the body to strengthen bilateral coordination.

7. Build upper body strength and stability to gain controlled movement of shoulders.

**Massachusetts Curriculum Frameworks:**

**PreK-ESS3-1** Engage in discussion and raise questions using examples about local resources humans use to meet their needs.

**PreK-PS2-2** Through experience, develop awareness of factors that influence whether things stand or fall.

**MA.SL.PK.3** Ask and answer questions in order to seek help, get information or clarify something that is not understood.

**MA.SL.PK.6** Speak audibly and express thoughts, feelings, and ideas.

**Lesson Summary:**

Give the children free reign in block area to build and create their own greenhouse. Allow the children to use paper, crayons, and cameras for picture taking. Let the children bring in items from other areas of the classroom if they feel it will enhance their greenhouse. Document and record the children’s conversations and thought processes throughout the building process. The children’s imaginations will soar!
You can post pictures of greenhouses in the area for the children to look at while they build their own.

**Extensions of learning:**

What is a greenhouse?

What kind of plants should we keep in the greenhouse?

**Adaptations:**

If the children are unsure show them books about green house. Let them get comfortable with the idea before having them build.

**Additional Resources:**

“How to build your own greenhouse” by Roger Marshall

“The reason for seasons” by Gail Gibbons

[WWW.Climatekids.nasa.gov/greenhouseeffects](http://WWW.Climatekids.nasa.gov/greenhouseeffects)

[WWW.epa.gov/climatechange/kids](http://WWW.epa.gov/climatechange/kids)
Science, Technology, Mathematics

Topic: Rain Saver

Duration: 30 minutes (once the rain barrel contains water)

Learning Objectives:
To gain an understanding of water conservation
To gain an understanding of how to care for a garden and use nature’s resources
To gain confidence in their abilities to care for a garden

Activity Description:
The children will have the opportunity to explore a rain barrel and utilize the water it catches from the rain to water the garden.

Materials:
Watering cans
Rain barrel
Stick

Guidelines for Preschool Learning Experiences:

Language
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.

Number Sense
3. Use positional language and ordinal numbers (first, second, third) in everyday activities.
**Inquiry Skills**

1. Ask and seek out answers to questions about objects and events with the assistance of interested adults.

**Measurement**

14. Use nonstandard units to measure length, weight, and amount of content in familiar objects.

**Life Sciences**

10. Observe and identify the characteristics and needs of living things: humans, animals and plants.

**Massachusetts Curriculum Frameworks:**

PreK-ESS2-3 Explore and describe different places water is found in the local environment

PreK-ESS2-6 Understand the impact of water on living things

**Lesson Summary:**

In small groups of 4-5 children take a walk outside into the green house area. Introduce a rain barrel to the children. Show them what it is and let them investigate it. Give each child a watering can and let them open the spigot and fill their watering can with rain water. You can let the children dip a stick into their water to measure (unconventionally) how much water they put in their watering can. Once all the children have water in their cans take a walk to the garden or into the green house and let them water the plants and flowers. **Remember to do this activity after it rains to ensure water in the barrel**

**Extensions of learning:**

Why is a rain barrel a good tool to have for your garden?

What else can you do with the water from the rain barrel?

Why is it important to conserve (save) water?

**Additional Resources:**

“Dad What Are You Building Now: Rain Barrel Edition” by Tom Carsley

“Build an Extreme Green Rain Barrel” by Phillip Rastocny
Science
Topic: Bees Bees Bees
Duration: 30 minutes

Learning Objectives:
To begin to understand the role bees and other insects have with pollination and germination
To gain a respect for bees and other insects which are beneficial to the gardening process

Activity Description:
The children will have the opportunity to observe and record data about bees and other insects in their garden. Their recordings will be a part of a classroom book.

Materials:
Binoculars
Crayons
Paper
Outdoor flower garden area
Camera
Book fasteners

Guidelines for Preschool Learning Experiences:
Language
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.
4. Listen to and use formal and informal language.
Composition

16. Use their own words or illustrations to describe their experiences, tell imaginative stories, or communicate information about a topic of interest.

20. Generate questions and gather information to answer their questions in various ways.

Massachusetts Curriculum Frameworks:

PreK-PS1-4 Recognize through investigation that physical objects and materials can change under different circumstances.

Prek-LS1-4 Use their five senses in their exploration and play to gather information

PreK-LS2-3 Give examples from the local environment of how animals and plants are dependent on one another to meet their basic needs

MA/PK.MD.B.3 Sort, categorize and classify objects by more than one attribute

Lesson Summary:

Bring the children outside to the flower garden area. Let them sit on the edge of the garden. Give them paper and crayons. Ask the children to observe the garden for a while. After a while ask the children about what they see, hear, smell, etc. Talk to the children about the insects (bees). Let the children take pictures of the insects that they see. Have the children draw what they see the bees doing in the garden. After the children do this, dictate what they say onto their papers. After the children are done with their papers be sure to put their names on them. Make a flip through book for the class to share with one another and put the book on the book shelf.

Extensions of learning:

What do bees do for the garden?

Why do bees live in hives?

How many different bees can you name?

Adaptations:

Some children may be afraid once they know they are looking at bees and other bugs. Let them sit a little further away so that they feel secure and still participate in the activity.

Additional Resources:

“What if There Were No Bees?” By Suzanne Slade

“What do You Know Book About Bees” by Carol Miller

“The Beautiful Bee Book” by Sue Unstead
Science

Topic: Insect Exploration

Duration: 15 minutes

Learning Objectives:
To gain an understanding about what insects we have in and around our garden.
To gain an understanding about insects that are beneficial and harmful to our plants.

Activity Description:
The children will have the opportunity to do some investigating with this activity. Explore the world around them and identify the insects that they see by taking pictures and making graphs to further their knowledge about insects.

Materials:
Magnifying glasses
Camera
Books about insects
The worm guide book
Chart paper to hang up pictures for helpful and harmful bugs.

Guidelines for Preschool Learning Experiences:

Language
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.
**Reading & Literature**

6. Listen to a wide variety of age appropriate literature read aloud.

13. Relate themes and information in books to personal experiences.

**Patterns & Relations**

7. Explore and describe a wide variety of concrete objects by their attributes.

8. Sort, categorize, or classify objects by more than one attribute.

**Inquiry Skills**

1. Ask and seek out answers to questions about objects and events with the assistance of interested adults.

4. Record observations and share ideas through simple forms of representation such as drawings.

**Massachusetts Curriculum Frameworks:**

*PreK-LS1-4:* Use their five senses in their exploration and play to gather information.

*PreK-PS1-4:* Recognize through investigation that physical objects and materials can change under different circumstances.

**Lesson Summary:**

Take the children in small groups (4) outdoors around the garden. Give them magnifying glasses so that they can get a close look at the insects they find. Let them study the insects and photograph them if it is possible. Bring the children inside and print out the pictures. Have the children find the insects in the guide book or other insect books. When the insect is found in a book read to the children if it is harmful or helpful to the garden. Make a chart with the children so they can concretely see with the pictures which bugs are good and which are not. If you would like to further elaborate on this activity you could go on to figure out how to treat for certain bugs or pests organically with the children.

**Extensions of learning:**

What kind of insects do you think we will see near the garden?

Why are some insects good for our garden?

What should we do to keep our garden safe from harmful insects?
**Adaptations:**
Allow the children that are fearful to look at other children’s bugs instead of finding their own. Give the children containers if they are afraid to hold the bugs in their hands. Also the children may want to continue this activity for a few days once they begin to understand and grasp the concept.

**Additional Resources:**
“The Grouchy Ladybug” by Eric Carle
The 360° Worm Factory Guide Book
“Jack’s Garden” by Henry Cole
Science, Math

Topic: Morph Magic

Duration: 7+ days

Learning Objectives:

To learn about metamorphosis of a caterpillar to a butterfly
To observe and collect data about the process of metamorphosis
To experience the majesty of such a natural phenomenon

Activity Description:

With this activity we will care for and watch caterpillars live, transform into chrysalis and then to butterfly. The children will have the opportunity to document and experience the entire transformation from beginning to end.

Materials:

Butterfly garden (Insect lore) (amazon.com)
Butterfly Larvae (mail in order)
**Comes with food
Branch from a tree outside

Guidelines for Preschool Learning Experiences:

Language

1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).

2. Participate actively in discussions, listen to the ideas of others, and ask and answer relevant questions.

3. Communicate personal experiences or interests.

4. Listen to and use formal and informal language.
Reading and literature

12. Listen to, recite, sing, and dramatize a variety of age-appropriate literature.

Composition

20. Generate questions and gather information to answer their questions in various ways.

Number sense

1. Listen to and say the names of numbers in meaningful contexts.
4. Use concrete objects to solve simple addition and subtraction problems using comparative language (more than, fewer than, same number of).

Inquiry Skills

1. Ask and seek out answers to questions about objects and events with the assistance of interested adults.
2. Make predictions about changes in materials or objects based on past experience.
4. Record observations and share ideas through simple forms of representation such as drawings.

Life Science

10. Observe and identify the characteristics and needs of living things: humans, animals, and plants.
12. Observe and describe plants, insects, and animals as they go through predictable life cycles.

Living Things and Their Environment

17. Observe and describe how natural habitats provide for the basic needs of plants and animals with respect to shelter, food, water, air, and light.

Massachusetts Curriculum Frameworks:

PreK-LS1-2 Recognize that all plants and animals grow and change over time.
PreK-LS3-2 Use observation to recognize differences and similarities among themselves and their friends

Lesson Summary:

It is important that you have a butterfly habitat prepared and ready before you order caterpillars. You can order the butterfly habitat on www.amazon.com (Recommended: Insect Lore). This also comes with a voucher to get the caterpillars. Order the caterpillars. Once the caterpillars come you have to watch them. When they begin to migrate towards the top of the container they arrived in, put them in the butterfly habitat,
container and all. Stick the top of the container to the top of the butterfly habitat with the wire provided. The wire will stick through the mesh. You will see them looking for a place to transform. Be sure to put a branch in the habitat for the caterpillars to find a place that’s comfortable. You will see them attach and form a “J” with their body. It doesn’t take long once this happens. The caterpillars typically stay in chrysalis for 7-10 days. Give the children paper and a writing utensil and have them tally the amount of days before the transformation. Once the chrysalis begins to hatch be sure to put the food (sugar water soaked cotton and watermelon) on the bottom of the habitat for the butterflies to eat. You can keep the butterflies for a few days to watch them thrive before letting them go into the wild.

**Extensions of Learning:**

What do you know about caterpillars?
What do you know about butterflies?
How many different butterflies are there?
Where do butterflies live?
What do butterflies eat?
What is metamorphosis?

**Adaptations:**

**Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning**

Provide materials with Braille and tactual symbols along with opportunities for development of tactile skills.

Provide opportunities for interaction with typically developing peers.

Ensure the classroom space allows for wheelchairs, walkers or other equipment so that children using them can move about the classroom safely and independently.

**Additional Resources:**

[www.amazon.com](http://www.amazon.com)
[www.insectlore.com](http://www.insectlore.com)
[www.naturegift.com](http://www.naturegift.com)

Books

“Caterpillars and Butterflies” by Stephanie Turnbull

“From Caterpillar to Butterfly” by Deborah Heiligman
Science

**Topic:** Letting Go (releasing the butterflies)

**Duration:** 25 minutes

**Learning Objectives:**
- To gain a respect for living things
- To understand the life cycle of a butterfly
- To gain an understanding of living things in their own habitat

**Activity Description:**
The children will experience the life cycle and natural habitat of the butterfly while letting them go free into nature.

**Materials:**
- Paper
- Colored pencils
- Camera
- Butterflies
- Butterfly habitat

**Guidelines for Preschool Learning Experiences:**

**Language**
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.

**Composition**
20. Generate questions and gather information to answer their questions in various ways.
**Shapes & Spatial Sense**

10. Investigate and identify materials of various shapes, using appropriate language.

**Data Collection & Analysis**

15. Organize and draw conclusions from facts they have collected.

**Inquiry Skills**

1. Ask and seek out answers to questions about objects and events with the assistance of interested adults.

2. Make predictions about changes in materials or objects based on past experience.

**Life Sciences**

10. Observe and identify the characteristics and needs of living things: humans, animals, and plants.

12. Observe and describe plants, insects, and animals as they go through predictable life cycles.

**Living Things & Their Environment**

17. Observe and describe how natural habitats provide for the basic needs of plants and animals with respect to shelter, food, water, air, and light.

**Massachusetts Curriculum Frameworks:**

**PreK-LS1-1** Compare, using descriptions and drawings, the external body parts of animals and plants and explain the functions of some observable body parts

**PreK-LS1-2** Recognize that all plants and animals grow and change over time

**PreK-LS2-1** Use evidence from plants and animals to define several characteristics of living things that distinguish them from non living things

**PreK-LS2-2** Using evidence from the local environment explain how familiar plants and animals meet their needs where they live

**PreK-LS2-3** Give examples from the local environment of how animals and plants are dependent on one another to meet their basic needs

**Lesson Summary:**

First take the butterfly habitat and gently place it in the middle of the table. Give the children colored pencils and let them draw one or more of the butterflies they see. Ask the children to point out the different body parts of the insect.
After each child has had the opportunity to do this, have the children line up to go outside. Bring the children on a nature walk and discover the best place to let the butterflies go free. Remind the children that the butterflies like certain plants. If you get painted ladies as recommended these butterflies prefer thistle, milk weed, aster, daisies and black eyed Susan, which are all common weeds or flowers. Once a good area has been discovered have the children sit in a circle around the butterfly habitat. Unzip the top and watch as these amazing creatures fly to find a new home! Take pictures for the children to look back at later.

**Extensions of learning:**

Where do you think the butterflies will go?
What kind of flowers do the butterflies like?
How do you feel watching the butterflies fly away to a new home?

**Adaptations:**

Allow the children that are frightened of bugs to sit on the outside of the circle and watch from a distance.

**Additional Resources:**

“From Caterpillar to Butterfly” by Deborah Heiligman

“Where Butterflies Grow” by Joanne Ryder

“My Oh My a Butterfly” by Tish Rabe
Science, Engineering, Math

**Topic:** Check, Care, Compost!

**Duration:** 30 minutes weekly, ongoing composting project

**Learning Objectives:**
To gain an understanding that you have to keep up and to continue to care for a compost pile
To gain an understanding of persistence and the concept of how the compost changes

**Activity Description:**
The children will have the opportunity to check on the compost pile, add to it and continue to tend to it as it continues to make healthy soil for the gardens and greenhouse.

**Materials:**
A container vented
Scraps from lunches for the week
Compost pile or barrel

**Guidelines for Preschool Learning Experiences:**

**Language**

1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.

**Inquiry Skills**

1. Ask and seek out answers to questions about objects and events with the assistance of interested adults.
4. Record observations and share ideas through simple forms of representation such as drawings.
Lesson Summary:
This activity is intended for the children to do after they have begun the composting pile initially. The children should continue to save scraps of food and paper. Once weekly, a group will take a walk with an educator and the bucket of scraps. Each child can dump some of the scraps into the compost pile and take turns spinning it. This will ensure that the children will see the changes that are taking place to the matter inside of the composter. Continue doing this throughout the year. Have the children in each group document or dictate their findings. Make a time line with the children to see how long it takes to get organic soil from the compost.

Extensions of learning:
What is happening to the compost?
Do you see any changes?
What does it look like? Smell Like?
How long do you think it is going to take to get soil?

Adaptations:
Children that are uncomfortable touching the matter put into the composter may watch, or let that child take pictures.

Additional Resources:
“Composting” by Robin Koontz
“Kids Can Compost” by Wen-Chia Tsai Parker
“Garbage Helps Our Garden Grow” by Linda Glaser
Science

**Topic:** Worm Excursion

**Duration:** 20 + minutes

**Learning Objectives:**
To gain an understanding about how worms move
To gain an understanding of how worms help irrigate soil for plant growth

**Activity Description:**
The children will examine and observe the nature of the worm. The children will also be a part of a guessing graph to determine the worm’s actions during the activity.

**Materials:**
Worms
A tray
Black paper
White paper
Magnifying glass
Coloring utensils
Paper for drawing
A “guessing graph”

**Guidelines for Preschool Learning Experiences:**

**Language**
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.
**Inquiry Skills**

2. Make predictions about changes in materials or objects based on past experience.

**Life Sciences**

10. Observe and identify the characteristics and needs of living things: humans, animals, and plants.

11. Investigate, describe, and compare the characteristics that differentiate living from non-living things.

12. Observe and describe plants, insects, and animals as they go through predictable life cycles.

13. Observe and describe ways in which many plants and animals closely resemble their parents in observed appearance.

**Living Things & Their Environment**

17. Observe and describe how natural habitats provide for the basic needs of plants and animals with respect to shelter, food, water, air, and light.

**Technology & Engineering**

26. Observe and describe ways that animals, birds, and insects use various parts of their bodies to accomplish certain tasks and compare them to ways people would accomplish a similar task.

**Visual Arts**

26. Create artwork from memory or imagination.

**Massachusetts Curriculum Frameworks:**

**PreK-PS1-4** Recognize through investigation that physical objects and materials can change under different circumstances

**PreK-LS2-3** Give examples from the local environment of how animals and plants are dependent on one another

**Lesson Summary:**

Give the children a tray and then give them some worms. You can do this with the red wigglers used for the worm factory or you can easily find worms outdoors. Let the children watch the worms move. Have the children look at the worms through a
magnifying glass to see the worm’s body up close. Let the children draw the worm, and dictate any questions they have. Give the children a white piece of paper and a black piece of paper. Have the children put the worms in between the light and dark paper and watch what the worms do. Before the worms move ask the children what they think the worms will do and graph their answers on a “guessing graph”. The worms will migrate towards the dark paper.

**Extensions of learning:**

What are the parts of the worm’s body?

Why does the worm prefer dark?

Why does how the worm moves effect plant growing?

**Adaptations:**

*Do not make children touch the worms. Offer the children gloves or plastic tweezers if needed.*

**Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning**

Place direct lighting over work areas and locate art area near bright indirect light to assist children with visual disabilities.

Make sure children identify themselves before speaking

Use thick cord taped to the floor to mark children’s personal space

Provide good models of communication (in any language).

Use special or adaptive devices to increase a child’s level of communication and/or participation.

Use a favorite toy, activity, technology, or person to encourage communication and/or participation.

Provide opportunities for interaction with typically developing peers.

**Additional Resources:**

[www.yourgardeningfriend.com](http://www.yourgardeningfriend.com)

“Wonderful Worms” by Linda Glaser

“Garden Wigglers” by Rick Peterson
Science

**Topic:** Worms Make Soil (Worm Factory)

**Duration:** 30 minutes to start/on-going composting project

**Learning Objectives:**
- To gain an understanding about worms and composting
- To gain a hands on experience with worm compost
- To understand why compost from worms is good for the garden

**Activity Description:**
The children will have the opportunity to start and continue a vermiculture project in the classroom.

**Materials:**
- Worm Factory 360°
- Red worms
- Newspaper
- Water
- Coconut husk
- Table scraps of fruits and veggies

***It is important not to put citrus or meat into the worm factory 360°. These foods are not good for the worms. It is also important to read the pamphlet that comes with the worm factory. This explains the ratios of browns (paper and leaves) to greens (fruits and vegetables***)

**Guidelines for Preschool Learning Experiences:**

**Language**

1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.

3. Communicate personal experiences or interests.

5. Listen to and use formal and informal language.

**Composition**

20. Generate questions and gather information to answer their questions in various ways.

**Number Sense**

3. Use positional language and ordinal numbers (first, second, third) in everyday activities.

**Inquiry Skills**

1. Ask and seek out answers to questions about objects and events with the assistance of interested adults.

**Life Sciences**

10. Observe and identify the characteristics and needs of living things: humans, animals, and plants.

**Massachusetts Curriculum Frameworks:**

**PreK-PS1-4** Recognize through investigation that physical objects and materials can change under different circumstances.

**PreK-ESS3-2** Observe and discuss the impact of people’s activities on the local environment

**Lesson Summary:**

To start the worm Factory set the collector base on the floor. To that add the worm ladder. This helps the worms that fall out of the tray back in. Now add a stacking tray and then the lid. To prepare the “bedding” for the worms place half of the coir brick in a bowl and pour one cup of water over it until it breaks apart. Crumble this up be sure it is moist and NOT wet. Mix together the coir mixture, half of the pumice, half of the shredded paper and 1 tablespoon of minerals and two cupful's of garden soil and mix it together. Place one or two dry sheets of newspaper to the bottom of the first tray of the worm factory. Add the bedding mixture over the dry newspaper and add 2-3 cups of food to ONE corner of the tray. Add the “red wigglers” worms on top of the bedding, include the soil that comes with the worms. Now take 5-10 full sheets of news paper
and fold them so that they fit into the tray. Moisten the sheets of paper until it is damp not dripping and place it on top of the habitat as a cover. Now place the lid on the worm factory. Be sure to let the worms settle for 2-3 days before you check them. You should see after the 3 days that the worms are moving around and in the corner where the food is. Once you see the worms are active you can begin to add more food. Within 4-6 weeks the feeding tray should be full of food. Once the feeding tray is full one inch from the top of the tray it is time to add the next tray.

**Adaptations:**

Have spoons and gloves for the children to scoop the worms and food if they are afraid to touch it.

**Additional Resources:**

The Worm Factory 360° pamphlet
**Science, Technology, Engineering, Math**

**Topic:** Let’s Use It! (finished compost)

**Duration:** 30 minutes (Large group)

**Learning Objectives:**
To gain an understanding of the use of compost
To experience the work and patience it takes to make compost

**Activity Description:**
The children will have the opportunity to use their compost that they have been working so hard to make. Depending on the time of year and where you are in your greenhouse project they will use the compost according, whether in the greenhouse plants, the garden, or just starting out planting seeds.

**Materials:**
Small shovels
A bucket
A composter with compost ready to use
A place to use the compost, garden, greenhouse, planting seeds

**Guidelines for Preschool Learning Experiences:**

**Language**
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.
Inquiry Skills

1. Ask and seek out answers to questions about objects and events with the assistance of interested adults.

Massachusetts Curriculum Frameworks:

PreK-ESS2-2 Observe and classify non-living materials, natural and human made, in their local environment

PreK-PS1-4 Recognize through investigation that physical objects and materials can change under different circumstances

MA.G.A.1 Identify relative positions of objects in space, and use appropriate language (e.g., beside, inside, next to, close to, above, below, apart). (PreK-ESS2-4)

MA.PK.MD.B.3 Sort, categorize, and classify objects by more than one attribute. (PreK-ESS2-2)

Lesson Summary:
Take the children outside to the composter. Have them stand around it in a circle. Dump the contents of the composter into a bucket and let the children look at it and investigate it. Bring the matter with the children to the garden, the greenhouse or inside depending on where you are using it. If you are starting planting at this time, put it in your soil with the seeds you choose and see how the plants grow. You can add compost to some plants and not to the others and do experiments. You can sprinkle it around your garden or in the plants you have growing in the greenhouse. Now that you have compost ready, use it and see what happens! Remember to keep the compost pile going throughout the year, so as you use it, be sure you are continuing the compost project and making more!

Extensions of learning:

What does the soil feel like?
What does the soil look like?
How did our trash and table scraps turn into soil?

Adaptations:
Children with sensory integration can use a shovel or wear gloves to touch the finished organic compost matter.
Science/Engineering/Mathematics

**Topic:** Care to Compost

**Duration:** Ongoing project to make compost

**Learning Objectives:**
To gain an understanding of compost, why we compost, and the benefits of composting
To gain an understanding of recycling and caring for our earth and ourselves

**Activity Description:**
In this activity the children will begin to compost and learn the importance of composting. The children will save food scraps and learn the importance of the carbon and nitrogen ratio for composting.

**Materials:**
2 containers
Compost tumbler
Leaves
Paper
Scraps from children’s lunches
Coconut coir

**Guidelines for Preschool Learning Experiences:**

**Language**
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.

**Inquiry Skills**
1. Ask and seek out answers to questions about objects and events with the assistance of interested adults.
4. Record observations and share ideas through simple forms of representation such as drawings.

**Massachusetts Curriculum Frameworks:**

**PreK-ESS2-2** Observe and classify non-living materials, natural and human made, in their local environment

**PreK-PS1-4** Recognize through investigation that physical objects and materials can change under different circumstances

**MA.G.A.1** Identify relative positions of objects in space, and use appropriate language (e.g., beside, inside, next to, close to, above, below, apart). (PreK-ESS2-4)

**MA.PK.MD.B.3** Sort, categorize, and classify objects by more than one attribute. (PreK-ESS2-2)

**MA.SL.PK.3** Ask and answer questions in order to seek help, get information, or clarify something that is not understood. (PreK-ESS2-1 and PreK-ESS3-1)

**Lesson Summary:**

This is the day that the children will begin to explore composting, what it is and what it means. During lunch set up two containers on a side table, one saying “trash” and one saying “to compost”. As the children start to clean up their lunch have them separate their trash from the recyclable, compostable items (Nitrogen-greens). After this is done, sit down with the children and talk about the items and what it is. Introduce them to a compost barrel or tumbler and start a compost pile to be an ongoing project for the classroom. You will also need to add to the compost tumbler, paper, leaves and coconut coir (Carbon-browns). This project could add to making new class jobs for someone to collect items and put them in the compost barrel daily/weekly. As time goes on the children will see the trash change and turn into compost which is great for the garden.

**Extensions of learning:**

What is compost?

What is biodegradable?

Why do you think we should compost?

How does composting help the earth?
**Adaptations:**

For children that have sensory integration offer them gloves to sort through their own lunch scraps

**Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning**

Make sure children identify themselves before speaking

Provide opportunities for interaction with typically developing peers.

Use a variety of symbols (tactual symbols, objects symbols, picture symbols such as Mayer-Johnson pictures) around the room along with various printed materials that support children’s primary languages while they are learning English (e.g., books, newspapers, magazines in the dramatic play area).

Arrange the room to encourage language conversations (e.g., tables pulled away from walls so that children sit or stand opposite each other).

**Additional Resources:**

“Composting” by Robin Koontz

“Kids Can Compost” by Wen-Chia Tsai Parker

“Garbage Helps Our Garden Grow” by Linda Glaser
Science

**Topic:** Apple Twist (fieldtrip)

**Duration:** 3 hours

**Learning Objectives:**

To gain an understanding about how to care for fruit trees
To gain an understanding of when to harvest apples
To further understand how apples grow

**Activity Description:**

The children will have the opportunity to experience an apple orchard and what it entails through a guided and open experience at a local apple farm.

**Materials:**

Local apple orchard (scheduled appointment with guide)
Bus or transportation

**Guidelines for Preschool Learning Experiences:**

**Language**

1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).

2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.

3. Communicate personal experiences or interests.

**Composition**

20. Generate questions and gather information to answer their questions in various ways.

**Number Sense**

5. Observe and manipulate concrete examples of whole and half.
Patterns & Relations

7. Explore and describe a wide variety of concrete objects by their attributes.

Life Sciences

10. Observe and identify the characteristics and needs of living things: humans, animals, and plants.

11. Investigate, describe, and compare the characteristics that differentiate living from non-living things.

Massachusetts Curriculum Frameworks:

PreK-LS1-2 Recognize that all plants and animals grow and change over time

PreK-LS1-4 Use their five senses in their exploration and play to gather information

PreK-LS2-3 Give examples from the local environment of how animals and plants are dependent on one another to meet their basic needs

Lesson Summary:

Bring the children to a local apple orchard and let them experience what it is like to have the opportunity to harvest apples. Show them the trees and their environment. Let them examine the insects flying around and decide if they are helpful or hurtful to the trees. Show the children how to take apples off of the tree so it does not damage the tree. Let the children try apples from different trees to see that not all apples taste the same.

Extensions of learning:

What can we do with apples?

Why are bees important in the apple orchard?

How many different kinds of apples do you think there are?

When do we harvest apples?

Adaptations:

For children that have sensory integration offer them gloves to sort through their own lunch scraps

Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning

Make sure children identify themselves before speaking

Provide opportunities for interaction with typically developing peers.
Composition

16. Use their own words or illustrations to describe their experiences, tell imaginative stories, or communicate information about a topic of interest.

20. Generate questions and gather information to answer their questions in various ways.

Massachusetts Curriculum Frameworks:

PreK-PS1-4 Recognize through investigation that physical objects and materials can change under different circumstances.

Prek-LS1-4 Use their five senses in their exploration and play to gather information

PreK-LS2-3 Give examples from the local environment of how animals and plants are dependent on one another to meet their basic needs

MA/PK.MD.B.3 Sort, categorize and classify objects by more than one attribute

Lesson Summary:

Bring the children outside to the flower garden area. Let them sit on the edge of the garden. Give them paper and crayons. Ask the children to observe the garden for a while. After a while ask the children about what they see, hear, smell, etc. Talk to the children about the insects (bees). Let the children take pictures of the insects that they see. Have the children draw what they see the bees doing in the garden. After the children do this, dictate what they say onto their papers. After the children are done with their papers be sure to put their names on them. Make a flip through book for the class to share with one another and put the book on the book shelf.

Extensions of learning:

What do bees do for the garden?

Why do bees live in hives?

How many different bees can you name?

Adaptations:

Some children may be afraid once they know they are looking at bees and other bugs. Let them sit a little further away so that they feel secure and still participate in the activity.

Additional Resources:

“What if There Were No Bees?” By Suzanne Slade

“What do You Know Book About Bees” by Carol Miller

“The Beautiful Bee Book” by Sue Unstead
Science, Engineering

**Topic:** Investigating our Community (fieldtrip to the Community Harvest Project or a local farm near you)

**Duration:** 2 hours

**Activity Description:**
Fieldtrip to a local farm or Community Harvest project will give the children some insight on the importance of a farm and also the importance of the knowledge for them to grow and harvest themselves.

**Materials:**
- A bus for transportation (unless walking distance)
- Chaperones
- Anything provided from the farm

**Learning Objectives:**
- To gain an understanding of what others are doing in the community with gardening
- To begin to realize diversity of plant life in your community
- To learn the proper maintenance of a garden
- To gain an understanding of the special awareness and relationships of different plants

**Guidelines for Preschool Learning Experiences:**

**Language**
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.
4. Engage in play experiences that involve naming and sorting common words into various classifications using general and specific language.

5. Listen to and use formal and informal language.

Data Collection & Analysis
15. Organize and draw conclusions from facts they have collected.

Inquiry Skills
1. Ask and seek out answers to questions about objects and events with the assistance of interested adults.

2. Make predictions about changes in materials or objects based on past experience.

Living Things & Their Environment
16. Observe and describe seasonal changes in plants, animals and their personal lives.

Massachusetts Curriculum Frameworks:
Pre-K-LS1-2 Recognize that all plants and animals change over time.

Pre-K-LS2-2 Using evidence from the local environment, explain how familiar plants and animals meet their needs where they live.

Pre-K-ESS3-1 Engage in discussion and raise questions using examples about local resources; (including soil and water) humans use to meet their needs

Pre-K-ESS3-2 Observe and discuss the impact of people’s activities on the local environment.

MA.SL.PK.6 Speak audibly and express thoughts, feelings, and ideas. (PreK-ESS2-1, PreK-ESS3-1, and PreK-ESS3-2)

Lesson Summary:
The children will take a fieldtrip to a local farm that your organization or educational facility has chosen to partner up with. While on this trip the children will have the opportunity to plant, pick, and investigate all aspects of the farm safely. Allow the children to ask questions and see for themselves what grows in their own environment.

Extensions of learning:
What do you think we are going to learn about on the field trip?
What do you think the people that are working there will be doing?
What did you learn from the Community Harvest Project?
How do you think we can help?

**Additional Resources:**
Pamphlets about the farm; from the farm
“In the Garden” by Elizabeth Spurr
“From Seed to Plant” by Gail Gibbons
Science, Technology, Mathematics

Topic: Wacky Weather

Duration: On-going graph (at least 1 week, can last the whole year)

Learning Objectives:
To gain an understanding of the affects weather has on plants and flowers
To begin to understand the use of a graph
To make connections about weather and plant care

Activity Description:
This activity will allow the children to observe weather experiences. They will have to watch the weather daily and record their findings.

Materials:
Graph
Container outside to catch rain
Thermometer outdoors

Guidelines for Preschool Learning Experiences:

Language
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.

Data Collection & Analysis
15. Organize and draw conclusions from facts they have collected.
**Inquiry Skills**

4. Record observations and share ideas through simple forms of representation such as drawings.

**Earth and Space Sciences**

7. Identify the characteristics of local weather based on first-hand observations.

**Massachusetts Curriculum Frameworks:**

**PreK-ESS2-4** Use simple instruments to collect and record data on elements of daily weather

**PreK-ESS2-5** Describe how local weather changes from day today and over the seasons and recognize patterns in those changes

**PreK-ESS2-6** Understand the impact of weather on living things

**MA.PK.CC.C.5** Use comparative language, such as more/less than, equal to, to compare and describe collections of objects

**MA.G.A.1** Identify relative positions of objects in space, and use appropriate language

**Lesson Summary:**

Set up a graph that can run weekly or longer (your preference). Be sure to have all of the days of the week and all of the weather possibilities on the graph. Also put a container or measuring cup outside to catch rainfall. Put a thermometer to measure temperature as well. You can add weather graphing into circle time or you can do it in the morning and the afternoon to see the difference daily as well as weekly. Give the children “jobs” referring to the weather graphing. Job list includes:

- Marking the graph
- Checking the weather
- Checking the rain catcher
- Marking the rain catcher graph
- Reading the thermometer
- Marking the thermometer graph
- Checking the garden

Alternate the jobs so that all the children get a turn. At the end of the week you can tally results and continue this from week to week or stop after a week depending on the interest of the children.
Extensions of learning:
What do you call the study of weather?
Why is it important to study weather patterns?
What do you think will happen if it does not rain for a week?
What do you think will happen if it rains too much?

Adaptations:
Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning
Provide materials with Braille and tactual symbols along with opportunities for development of tactile skills.
Use visual pictures or symbols to illustrate the words to songs.

Additional Resources:
“Oh Say Can You Say What’s The Weather Today?” by Tish Rabe
“Weather” by Seymour Simon
Science, Math, Engineering

**Topic:** Fairy Garden

**Duration:** 1 hour

**Learning Objectives:**

To gain an understanding of the outside world around them through imagination and exploration

To gain a sense of confidence and ownership through a self made 3-D creation

**Activity Description:**

The children will have the opportunity to collect and gather things from nature to create their own nature’s masterpiece.

**Materials:**

Container to collect items on nature walk

Items from nature (rocks, moss, grass, twigs, leaves, etc.)

Glue

Styrofoam, wood or cardboard

**Guidelines for Preschool Learning Experiences:**

**Language**

1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).

2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.

3. Communicate personal experiences or interests.

**Reading & Literature**

12. Listen to, recite, sing, and dramatize a variety of age-appropriate literature.

13. Relate themes and information in books to personal experiences.
Composition
16. Use their own words or illustrations to describe their experiences, tell imaginative stories, or communicate information about a topic of interest.

Living Things & Their Environment
17. Observe and describe how natural habitats provide for the basic needs of plants and animals with respect to shelter, food, water, air, and light.

Visual Arts
18. Explore a variety of age-appropriate materials and media to create two and three-dimensional artwork.
23. Experiment with the use of texture in artwork.
26. Create artwork from memory or imagination.

Massachusetts Curriculum Frameworks:
PreK-ESS2-2 Observe and classify non-living materials, natural and human-made, in their local environment
MA.PK.MD.B.3 Sort, categorize, and classify objects by more than one attribute (PreK-ESS2-2)

Lesson Summary:
Take the children on a nature walk. Give each child a cup or a container to put some of their findings in. As you walk with the children let them look, listen and feel the environment around them. Have the children collect small rocks, twigs, grass, moss, etc., to make a fairy garden nature-scape of their own. Bring all of the children and their items in and let them scatter around the room to sort. Give each child a piece of cardboard, wood, or Styrofoam and glue and let them create their own nature’s masterpiece.

Extensions of learning:
What is nature?
What is living and nonliving?
What do you hear outside?
What do you see outside?
How do you feel when you are outside?
Adaptations:
Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning

Place direct lighting over work areas and locate art area near bright indirect light to assist children with visual disabilities.

Make sure children identify themselves before speaking

Use thick cord taped to the floor to mark children’s personal space

Use art materials that provide texture (e.g., gel paint that dries with a raised surface; tempera paint with sand added); high-contrast paper (light, dark, shiny, sparkling); bold colors that are easy to differentiate.

Ensure the classroom space allows for wheelchairs, walkers or other equipment so that children using them can move about the classroom safely and independently

Additional Resources:
“Fairy Houses” by Barry Kane
“Gardening in Miniature” by Janit Calvo
“Fairy Gardens” by Betty Earl
Science, Technology, Engineering

Topic: Watering Cans

Duration: 20 minutes

Learning Objectives:
To gain an understanding that recycled objects can be used for other purposes
To feel a sense of responsibility while caring for living things (plants)

Materials:
Clean Milk jug
Permanent markers
Screwdriver or sharp scissors

Activity Description:
The children will have the opportunity to make their own watering cans and feel a sense of ownership for their gardening experience.

Guidelines for Preschool Learning Experiences:

Language
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.

Life Sciences
10. Observe and identify the characteristics and needs of living things: humans, animals, and plants.

Technology & Engineering
23. Explore and describe a wide variety of natural and man-made materials through sensory experiences.
24. Demonstrate and explain the safe and proper use of tools and materials.
Massachusetts Curriculum Frameworks:

PreK-ESS3-2 Observe and discuss the impact of people’s activities on the local environment.

Lesson Summary:

Give each child a clean recycled milk jug. Give the children permanent markers to decorate this jug. Take the cap and poke 3-6 holes in it with a screw driver or a sharp pair of scissors. This step should be done by the teacher for the safety of the children. The amount of holes depends on how big and how much water you want to come out. Let the children go to the sink and fill the jug with water (as much as they can carry). Give the children the cap and let them screw it back onto the milk jug. Bring them outside to the garden and let them water the plants.

Extensions of learning:

Why do we recycle?
What else can we recycle?

Adaptations:

Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning

Place direct lighting over work areas and locate art area near bright indirect light to assist children with visual disabilities.

Make sure children identify themselves before speaking

Use thick cord taped to the floor to mark children’s personal space

Use special or adaptive devices to increase a child’s level of communication and/or participation.

Additional Resources:

www.lifetricks.com
Science, Engineering

**Topic:** Dirt Tunnels

**Duration:** One day on going in texture table

**Learning Objectives:**
To gain an understanding of how worms work through soil
To gain an understanding of how water moves through the ground to feed the plants

**Activity Description:**
The children will have the opportunity to experiment with tunnels and water ways. They will make their own rivers and watch the way water flows and forms the earth around it.

**Materials:**
Texture table
Dirt
Pebbles and small rocks
Water
Water droppers
Pictures

**Guidelines for Preschool Learning Experiences:**

**Language**
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.
Composition

20. Generate questions and gather information to answer their questions in various ways.

Shapes & Spatial Sense

12. Listen to and use comparative words to describe the relationships of objects to one another.

Inquiry Skills

1. Ask and seek out answers to questions about objects and events with the assistance of interested adults.

2. Make predictions about changes in materials or objects based on past experience.

Earth and Space Sciences

5. Compare and contrast natural materials such as water, rocks, soil, and living organisms using descriptive language

7. Identify the characteristics of local weather based on first-hand observations.

Living Things & Their Environment

17. Observe and describe how natural habitats provide for the basic needs of plants and animals with respect to shelter, food, water, air, and light.

The Physical Sciences

19. Explore, describe, and compare the properties of liquids and solids found in children’s daily environment.

Physical Development


12. Use eye-hand coordination, visual perception and tracking, and visual motor skills in play activities.

Massachusetts Curriculum Frameworks:

PreK-PS2-1 Using evidence, discuss ideas about what is making something move the way it does and how some movements can be controlled

PreK-PS2-2 Through experience, develop awareness of factors that influence whether things stand or fall
PreK-ESS2-3 Explore and describe different places water is found in the local environment

PreK-ESS2-6 Understand the impact of weather on living things

Lesson Summary:
In the texture table put dirt, soil, small rocks, etc. (anything you may find in the ground outside.) Give the children small water droppers and containers of water. Let the children drop water into the dirt matter until they start to see tunnels and pathways. Then let the children make rock walls, hills and dams to see how they can alter the waters pathways. Have images, worm pathways and tunnels on the wall for the children to investigate while they experiment with their own tunnels.

Extensions of learning:
What do you think will happen as the water is dropped on the dirt?
What is erosion?
What are some places that water does this to the land?

Adaptations:
Give the children gloves if they are not comfortable touching dirt.

Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning
Place direct lighting over work areas and locate art area near bright indirect light to assist children with visual disabilities.
Arrange the room to encourage language conversations (e.g., tables pulled away from walls so that children sit or stand opposite each other).
Ensure the classroom space allows for wheelchairs, walkers or other equipment so that children using them can move about the classroom safely and independently

Additional Resources:
Images from:
www.superstock.com
www.flickr.com
Science, Math

**Topic:** Faking It (flower project)

**Duration:** 20 minutes outdoors, 20 minutes indoors

**Learning Objectives:**
To gain an understanding of imagery
To learn about different types of flowers and how to differentiate between them

**Activity Description:**
The children will go on a nature walk, take pictures and pick flowers. Through this experience they will make a 3-D creation representing the flowers that they observe.

**Materials:**
Cameras
Paper
Coloring utensils
Printed pictures
Pompoms
Pipe cleaners
Paint
Glue
Tissue paper
Books about flowers
Any free art material the children can use

**Guidelines for Preschool Learning Experiences:**

**Language**
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.

3. Communicate personal experiences or interests.

4. Engage in play experiences that involve naming and sorting common words into various classifications using general and specific language.

5. Listen to and use formal and informal language.

**Inquiry Skills**

4. Record observations and share ideas through simple forms of representation such as drawings.

**Life Sciences**

10. Observe and identify the characteristics and needs of living things: humans, animals, and plants.

11. Investigate, describe, and compare the characteristics that differentiate living from non-living things.

12. Observe and describe plants, insects, and animals as they go through predictable life cycles.

**Visual Arts**

18. Explore a variety of age-appropriate materials and media to create two and three-dimensional artwork.

19. Observe the safe and appropriate use and care of art materials.

**Massachusetts Curriculum Frameworks:**

**PreK-PS1-2** Investigate the natural and human-made objects. Describe, compare, sort and classify objects based on observable physical characteristics, uses and whether something is manufactured or occurs in nature

**MA.PK.MD.B.3** Sort, categorize, and classify objects by more than one attribute. (PreK-PS1-2)

**Lesson Summary:**

Take a nature walk outside. Bring cameras, paper and coloring utensils. Let the children explore and discover different flowers around them. Let them take pictures with the cameras or let them draw what they see. Let the children pick some of the flowers. Go back inside, print the pictures off of the camera and give them to the
The children. Put he flowers in a container of water for the children to look at. Give the children many different free art materials such as, glue, paint, pipe cleaners, cotton balls, pompoms, tissue paper, even books to find the names of the flowers. Let them create a 3-D flower creation from the pictures that they took or drew outside. Then they can display their work around the room when it is dry.

**Extensions of learning:**

- What kinds of flowers do you see around us?
- What are flowers used for?
- What is your favorite kind of flower?

**Adaptations:**

**Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning**

Place direct lighting over work areas and locate art area near bright indirect light to assist children with visual disabilities.

Use art materials that provide texture (e.g., gel paint that dries with a raised surface; tempera paint with sand added); high-contrast paper (light, dark, shiny, sparkling); bold colors that are easy to differentiate.

Use special or adaptive devices to increase a child’s level of communication and/or participation.

Use a favorite toy, activity, technology, or person to encourage communication and/or participation.

Provide opportunities for interaction with typically developing peers.
Science, Technology, Math

Topic: Pickling pickles

Duration: 1-4 days

Learning Objectives:
To gain an understanding about how different things can be made from one item
To learn about pickling and why it is done

Activity Description:
The children will have the opportunity to make pickles and then taste them when they are ready.

Materials:
Pickling cucumbers
1 head of garlic minced
A bunch of dill
2 tsp. salt
2 cups water
2.5 cups white vinegar
Mason jar
Refrigerator

Guidelines for Preschool Learning Experiences:

Language
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.
**Number Sense**

3. Use positional language and ordinal numbers (first, second, third) in everyday activities.

**Inquiry Skills**

1. Ask and seek out answers to questions about objects and events with the assistance of interested adults.

**Technology and Engineering**

24. Demonstrate and explain the safe and proper use of tools and materials.

**Massachusetts Curriculum Frameworks:**

**PreK-PS1-4** Recognize through investigation that the physical objects and materials can change under different circumstances

**Lesson Summary:**

In a sauce pan bring the water and vinegar to a boil. This should be done cautiously and preferable away from the children. Add in the salt. Have the children cut up cucumbers while the water is boiling. They can cut the cucumbers in to slices or spears, or even chunks. Put the cucumbers in the mason jars tightly. Add minced garlic and dill leaves, use your discretion, for taste. Pour the hot liquid mixture into the jar until it is ½ inch from the top of the jar. The educator should handle the hot liquid. Put the cover on the jar tightly and place in the refrigerator for at least 24 hours. Best results if the pickles sit for a few days. This recipe may make more than one jar, depending on the size of the jars you have.

**Extensions of learning:**

What are pickles made of?

What are some other kinds of pickles?

What else can you pickle?

**Adaptations:**

**Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning**

Place direct lighting over work areas and locate art area near bright indirect light to assist children with visual disabilities

**Additional Resources:**

“Canning Pickles Step by Step” by Mary Beth Stenson
Science, Technology, Engineering

Topic: Shake It Up

Duration: 30 minutes

Learning Objectives:
To gain an understanding of the different sounds around them and how they are created
To gain an understanding that simple things can form sound and waves

Activity Description:
The children will have the opportunity to make a rain stick and discover different sound waves by shaking them and turning them in different directions.

Materials:
Bowls
Spoons
Paper towel rolls
Sticky paper
Seeds
Rice
Dry beans
Corn seeds
Markers
Glue
Glitter
Guidelines for Preschool Learning Experiences:

Language
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.

Composition
20. Generate questions and gather information to answer their questions in various ways.

Shapes and Spatial Sense
12. Listen to and use comparative words to describe the relationships of objects to one another.

Data Collection & Analysis
15. Organize and draw conclusions from facts they have collected.

Physical Development
6. Alternate the left and right sides of the body and cross the midline of the body.

Movement and Dance
2. Respond to a variety of musical rhythms through body movement.

Music
13. Listen to, imitate, and improvise sounds, patterns, or songs.

Visual Arts
18. Explore a variety of age-appropriate materials and media to create two and three-dimensional artwork.

Massachusetts Curriculum Frameworks:
PreK-PS2-1 Using evidence, discuss ideas about what is making something move the way it does and how some movements can be controlled
PreK-PS4-1 Investigate sounds made by different objects and materials and discuss explanations about what is causing the sounds. Through play and investigations, identify ways to manipulate different objects and materials that make sound to change volume and pitch

Lesson Summary:
Set up a table with four bowls. Put dry rice in one, dry beans in one, seeds in one and corn seeds in another. Put a spoon in each bowl. Have four children at a time sit at the table. Give each child a paper towel roll and have them decorate it with markers. Give each child a square of sticky paper large enough to cover the bottom hole of the paper towel roll. Have the children peel it and stick it to the hole. You can check to make sure it is fully covered so nothing will fall out of the roll. Have the children put scoops of their choice into their paper towel roll. It can be as little as one scoop and as many as six scoops. They can mix the items or choose just one. After they have done this give them another square of sticky paper. Have them peel and stick it to the open end of the roll. Double check to make sure there are no holes or open spaces for the seeds or rice to fall out. If the children would like to glue glitter on their roll let them do so. Be sure to write all of the children’s names on their rolls and allow for the glue to dry. Once all the children have done this activity come together as a class and begin to shake them, let the items inside the roll slide, and listen to all of the different sounds that each roll makes. Let the children experiment and have fun with these.

Extensions of learning:
What else makes sounds?
How can you make sounds using only your body?
What is a sound you like the most?
Where do you hear loud sounds?

Adaptations:
Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning
Place direct lighting over work areas and locate art area near bright indirect light to assist children with visual disabilities.
Provide good models of communication (in any language).
Use special or adaptive devices to increase a child’s level of communication and/or participation.
Use a favorite toy, activity, technology, or person to encourage communication and/or participation.
Provide opportunities for interaction with typically developing peers.
Arrange the room to encourage language conversations (e.g., tables pulled away from walls so that children sit or stand opposite each other).

Use adaptive equipment and furniture so children can participate in all parts of the curriculum, small and large group activities, circle time, etc., along with their peers.

Ensure the classroom space allows for wheelchairs, walkers or other equipment so that children using them can move about the classroom safely and independently.

**Additional Resources:**

“The Science of Sound” by Steve Parker

“Sounds All Around” by Wendy Pfeffer

“What are Sound Waves?” by Robin Johnson
**Science, Technology**

**Topic:** Souper Soup!!

**Duration:** 30 minute preparation/4 hours slow cook

**Learning Objectives:**

To learn that there are many things you can do with the things you grow in a garden

To gain an understanding for the process of cooking and to further children’s independence with guidance

**Activity Description:**

The children will have the opportunity to participate in making and eating a harvested soup from their garden.

**Materials:**

- Harvested vegetables from the garden
- Plastic knifes
- Paper plates
- Crock pot
- Veggie stock (tomato juice or water)
- Bowls
- Spoons

**Guidelines for Preschool Learning Experiences:**

**Language**

1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).

2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.

3. Communicate personal experiences or interests.
Reading and Literature
13. Relate themes and information in books to personal experiences.

Measurement
13. Use estimation in meaningful ways and follow up by verifying the accuracy of estimations.

Massachusetts Curriculum Frameworks:
PreK-PS1-4 Recognize through investigation that physical objects and materials can change under different circumstances

Lesson Summary:
Towards the end of the harvesting season take the children to the garden and pick all the remaining vegetables that are ready to be picked. Bring them in and have the children wash them. Give each child a plastic knife and a paper plate and let them cut the vegetables into pieces. Discuss with the children what you can do with all of these vegetables. Introduce them to a crock pot. Have the children give guesstimates of how long they think the soup will take to cook. Put all of the vegetables in the crock pot. Add vegetable stock, tomato juice or water, and set the crock pot to high and put it in a safe place away from the children. Let the soup cook for approximately four hours on high. Turn off the pot and let cool. Give the children the soup for snack.

Extensions of learning:
What can we do with all of these vegetables?
What does it mean to harvest?

Adaptations:
Adaptations for children with Disabilities- taken from Appendix A in Massachusetts Guidelines for Preschool learning
Place direct lighting over work areas and locate art area near bright indirect light to assist children with visual disabilities.

Create “story boxes” for familiar stories. For example, place props for the story The Three Little Pigs in a box. When the story is read aloud, the props offer both tactual cues for the words being read, and the opportunity to act out story components. In this way concepts that might be available only by seeing or hearing will be made more meaningful while also allowing children more direct involvement with the story. These strategies enhance the activity for all children, not just those with a disability.

Provide good models of communication (in any language).

Use special or adaptive devices to increase a child’s level of communication and/or participation.
**Additional Resources:**

“Growing Vegetable Soup” by Lois Ehlert

“The Vegetables we Eat” by Gail Gibbons
Science, Mathematics, Technology, Engineering

Topic: Sun, Shade, Shadows

Duration: 10 minutes in the morning and 10 minutes in the afternoon.

Learning Objectives:
To gain an understanding of how the sun moves and from different directions this can affect the plants in the garden.
To understand when to water and care for our plants when the sun is out

Activity Description:
In this activity the children will have the opportunity to further investigate shadows and the sun and the effects the two have on the growth and conditions of the plants they have in their garden.

Materials:
Rulers
Measuring tape
Paper
Crayons

Guidelines for Preschool Learning Experiences:

Language
1. Observe and use appropriate ways of interacting in a group (taking turns in talking; listening to peers; waiting until someone is finished; asking questions and waiting for an answer; gaining the floor in appropriate ways).
2. Participate actively in discussions, listen to ideas of others, and ask and answer relevant questions.
3. Communicate personal experiences or interests.

Reading & Literature
6. Listen to a wide variety of age appropriate literature read aloud
Composition
16. Use their own words or illustrations to describe their experiences, tell imaginative stories, or communicate information about a topic of interest.

20. Generate questions and gather information to answer their questions in various ways.

Shapes and Spatial Sense
11. Explore and identify space, direction, movement, relative position, and size using body movement and concrete objects.

12. Listen to and use comparative words to describe the relationships of objects to one another.

Data Collection & Analysis
15. Organize and draw conclusions from facts they have collected.

Inquiry Skills
1. Ask and seek out answers to questions about objects and events with the assistance of interested adults.

2. Make predictions about changes in materials or objects based on past experience.

3. Identify and use simple tools appropriately to extend observations.

4. Record observations and share ideas through simple forms of representation such as drawings.

Earth and Space Sciences
8. Explore sunlight and shadows and describe the effects of the sun or sunlight.

9. Observe and describe or represent scientific phenomena meaningful to children’s lives that have a repeating pattern (e.g., day and night).

Massachusetts Curriculum Frameworks:
PreK-PS1-4 Recognize through investigation that the physical objects and materials can change under different circumstances

Pre-K-PS4-2 Connect daily experience and investigations to demonstrate the relationships between the size and shape of shadows, the objects creating the shadows, and the light source.
Pre-K-ESS1-2 Observe the use of evidence to describe that the sun is in different places in the sky during the day.

Lesson Summary:
Take the children outside to the garden area in the morning. Let them bring out measuring tapes and rulers. When you get outside let them look around the area and talk about where the sun is. Give the children paper and crayons to document their findings. Make sure the paper is folded in half so they can draw on one side in the morning and the other side in the evening. This will help them see the difference of the sun’s location. After they do this let them investigate the plants they have been growing by measuring them with rulers. Depending on the location of the sun they will discover shadows. Let them measure the shadows of the plants. Talk to the children about shadows and the location of the sun. Do this same activity in the afternoon/evening so that the children can compare the sun’s location and shadowing of the plants.

Adaptations:
Have visors or sunglasses for the children with severe eye sensitivity. Give a blanket or towel for any child that cannot sit in grass or on the ground to draw their findings.

Additional Resources:
“One Light, One Sun” by: Raffi
“What is My Shadow Made Of?” By Neil Morris
“Shadow Chaser” By Elly MacKay