UV Linkages for Environmental Literacy Unit Roadmap

The goals of UVLEL are to: *improve student and teacher environmental literacy, build collaborative professional partnerships, and provide opportunities for place-based learning and environmental citizenship.*

Teacher name: Leeanna Robinson

Unit Title: Garden to Campfire: Creating a School Garden for Campfire Cook-Outs

Grade Level: Kindergarten

Goals of this unit:

- Students will gain an understanding and appreciation for the natural world through gardening.
- Students will engage in the development and design of the school gardens.
- students will engage in hands-on experiences which will provide meaningful opportunities to make connections to the real world.
- Students will show an understanding of the interaction/interdependence between humans and the environment.
- Students will understand the importance of farms/gardens for our survival.

Essential questions to consider:

- What is the purpose of a garden?
- How do you care for and maintain a garden?
- How do we get the food that we eat?
- Does our climate affect what we can grow?
- How can we use what we grow to create meals?
- What safety practices should we follow when having a campfire?

Engage:

- Students will work together to create a school garden.
- Students will help to care for and maintain the garden.
- Students will use what they harvest in the outdoor classroom for cooking.
- This will be a continual project for the other kindergarten classes to come.

Students will understand:

Next Generation Science Standards (NGSS):

- **K-LS1-1:** Use observations to describe patterns of what plants and animals (including humans) need to survive.
    - LS1.C: Organization for Matter and Energy Flow in Organisms—All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow.
- **K-ESS2-1:** Use and share observations of local weather conditions to describe patterns over time.
    - ESS2.D: Weather and Climate ▪ Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over time.
- **K-ESS2-2:** Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.
    - ESS2.E: Biogeology ▪ Plants and animals can change their environment.

    - ESS3.C: Human Impacts on Earth Systems ▪ Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things.
- **K-ESS3-1:** Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.
    - ESS3.A: Natural Resources—Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do.

National Health Education Standards (NHES):

- HS.1: Students will comprehend the concepts related to health promotion and disease prevention to enhance health.
    - 2.1: Identify health behaviors that impact personal health.
- HS.7: Students will demonstrate the ability to practice health-enhancing behaviors and avoid or reduce health risks.
    - 2.1: Demonstrate healthy practices and behaviors to maintain personal health.

Students will know:

- The needs of living things
- Various types of garden tools and their uses
- How to care for and maintain a garden
- Fire safety, specifically (but not limited) to campfire safety
- How campfires help humans adapt
- How to reduce the impact of humans on the environment
- Cooking safety (relating to tools and cooking preparation)
- The importance of healthy eating as a means to promote personal wellness
- Vocabulary: life cycle, seed, roots, stem, leaf, flower, compost, soil, photosynthesis, germination, tools (trowel, rake, wheelbarrow, hoe, watering can)

Students will be able to:

- Describe the main things that living things need to survive (food, water, air, shelter).
- Explain the benefits of gardening and farming.
- Understand that plants provide resources for clothing, food, and oxygen.
- Demonstrate safe choices around the campfire.
- Demonstrate safety with cooking tools.
- Prepare basic meals with the assistance of adults.
- Discuss the importance of eating a balanced and healthy diet.

Assessments of Learning:

- Nature Notebooks (to record observations and journal)
- Whole- and small-group discussions
- Teacher observations

Length of Unit:

- September through May
    - Care and maintenance of garden primarily in the late fall and early spring
    - Camp fires used primarily for cooking in the warmer months, and used for cooking/warming in the colder months.

Suggested Timeline:

Projected Time:	Related Tasks
September	Decide on yearly project goals Late Sept.: Introduce campfire to students (safety rules)
October	Students will clean up and get the gardens ready for winter Plant garlic to be harvested next year Continue campfires with students/introduce cooking over campfire
November	Prep garden beds for winter (with students) Clean out and organize the greenhouse Continue campfires with students
December	Weatherize the greenhouse with the help of Student Council students Continue campfires with students
January	Continue campfires with students (primarily for warmth)--cooking projects will be weather dependent
February	Continue campfires with students (primarily for warmth)--cooking projects will be weather dependent
March	Start seedlings in the classroom Continue campfires with students
April	Begin prepping the gardens for planting (weather dependent) Repair the garden beds as necessary Continue campfires with students
May	Begin planting seedlings or direct planting chosen seeds from plant Field trip to a local farm
May/June	Plant additional seeds as necessary Routine care and maintenance of gardens Harvesting as necessary Using harvested goods on the campfire

Lesson Plans/LearningActivities to support learning targets:

Lesson:	Book/Activity/Assessments:
Introduction to the Outdoor Campfire ***Depending on student behaviors, can split the lesson into multiple sessions, or can repeat the lesson until understanding and safety is met.*	● Bring the portable campfire to the location where it will be kept. Do not start a fire in the fire pit today. ● Explain to students about the purpose of the fire pit. Tell students that you plan to use the campfire as a means to warm up in the winter months, but also to cook over. ● Discuss safety rules related to the fire: o An adult will also be located at the fire pit, student boundary around fire, not allowed near without an adult, no touching the fire pit, cooking/food prep to be done with an adult only, cooking to be completed by adult, etc. ● Ask students to share any rules regarding the fire pit that they feel are important. ● Tell students that you will keep the fire in its location so students can get accustomed to its presence. Allow students to continue about their morning in the woods, reminding students about boundary when nearby.

	• *Assessment:* During journal time, have students write/draw in their Nature Notebooks about two campfire safety rules.
Garden Clean-Up	• Bring students outdoors to the garden space. Tell students that they will help with clean-up. • Provide garden gloves as needed. • Ask students to pull any weeds or remove any dry foliage from the garden beds. • Have students place any waste material on a large tarp in order for easier removal. • Provide shovels and hoes and ask students to help turn and aerate the soil. • Put any garden scraps in the compost bin.
Planting Garlic & Preparing Beds for WInter	• Tell students that they will plant some garlic now, which will stay in the gardens during the winter time and will be ready to harvest when they go to first grade. • Divide students into small groups. Ask students to place cloves into prepared (tilled/loosened) soil, rough-side down, about 4 inches deep. Provide each group a wooden spoon with 4" marked for ease. • With an adult, have students make holes about 4-5 inches apart, in rows about 8-10 inches apart. • Students can place a clove in each hole, rough side down. Direct them to cover each clove completely and evenly. • With watering cans, lightly tampen the soil when done. • Once finished, mulch the garden beds with straw or hay (about 2-3 inches deep).
Cooking on the Campfire: Farm Fresh Applesauce	• Use apples picked from a recent field trip to the Apple Orchard. • Tell students they will use the apples they picked during their field trip to make applesauce. • Preparation: Students can help peel/cut apples into chunks. • Place ingredients into a cast iron Dutch oven. Place over the campfire. • Cook for approximately 30 minutes, stirring often, or until apples are tender. Serve students some softened apples, and have them use their forks to mash prior to eating. • *Assessment*: Write/draw the steps to making applesauce in Nature Notebook.
Cooking on the Campfire: Farm Fresh Popcorn	• Using dry corn cobs from a recent field trip to the Pumpkin Patch/Corn Maze. • Tell students they will use the dried corn cobs to make popcorn. • Preparation: Students will place corn cob in heavy duty aluminum foil (with enough space for air pocket). • Adult will carefully place over the fire until the popping sounds have slowed. • Carefully open the foil pouch and enjoy!
Weatherize the Greenhouse	• With the help of the Student Council, students will work together to put a frame around the greenhouse to protect it during the winter months.
Cooking on the Campfire: Roasted	• Use root vegetables from a local farm stand.

Root Vegetables from a Local Farm ***If possible, work closely with a local farm to purchase or have produced donated. This will be the same farm the students will visit later in the year.*	• Preparation: Students will cut vegetables and add to the roasting pan with oil and salt. • Adult will roast over the fire. • Serve warm. • Students can vote for while vegetable was their favorite, and write about it in their Nature Notebooks.
Cooking on the Campfire: Stone Soup ***If possible, ask the local farm to donate the produce, or have parents send in fresh vegetables.*	• Note: Ask parents to send in a vegetable to donate to add to the soup. • Prior to lesson, read the book "Stone Soup" to students. • Preparation: Students will cut and prep whatever ingredients they brought in to add to the soup. • Place ingredients in a large pot and place over the fire. • Length of cooking time depends on how vegetables used. • **Assessment:* Students will create our own classroom "Stone Soup" story with a beginning, middle, and end; can be whole group or independent.
Can Campfires Help You Stay Warm in the Winter?	• Conduct an experiment to show students how the radiant heat from the campfire can actually be used to keep warm. • In a large glass mason jars, fill 3 jars with snow. Tell students you will place the jars in 3 separate locations; one far away from the fire, one at the student boundary line, and one next to the fire. • Tell students that you will leave the jars in each location for the duration of the outdoor time and encourage students to check on the jars regularly and note any changes that occur. • In Nature Notebooks, ask students to draw the 3 jars as they look now. Ask students to write/draw what they predict will happen to each jar. • Have students check in with the jars at random increments throughout their outdoor time. • Before heading back indoors, ask students to observe each of the jars and discuss what occurred. • Ask students to draw the results in their Nature Notebooks. • **Assessment*: Ask students to answer the following question, either verbally or in writing: Where is the best place to stay warm while outdoors?
Planting/Starting Seeds Indoors	• Read, "The Tiny Seed" by Eric Carle. • Tell students that they will begin starter seeds indoors which will be planted in the garden once they have begun growing. • Choose a variety of seeds to begin starters. Try to find plants that need to be started around the same time frame. • Give each student a starter pot. Place several large buckets of soil and several trowels for easy access for students. • Students will first fill their pots with soil, loosely. Ask students to fill the soil to the top. • Depending on the seed type, plant the seed accordingly (sprinkle, use finger to make hole, etc.). • Provide students with several spray bottles to moisten the soil. • Place pots either in the window where there is plenty of light, or in a growing station. If using a growing station, discuss how the light from the grow lamps are different than the light from a regular light bulb (grow lamps offer full spectrum light, much like the sun, which regular bulbs only offer red or blue spectrum light).

	• Check plants daily to water and care for as needed. • ***Additional Suggested Books/Activities:*** "Plant the Tiny Seed" interactive book by Christine Matheson, "The Carrot Seed" by Ruth Krauss
Getting the Garden Ready to Grow!	• Encourage parent volunteers to come to the classroom to help lead small groups. • Bring students out to the garden. Tell students that we will prepare the soil in the gardens to begin transplanting our seedlings (which we have started indoors), or various starter plants/seeds (make sure to check each plant/seed for best planting times). • Break students into small groups (2-3 students) and assign each a section of the garden. If possible, ask a volunteer to monitor 1-2 groups. • Show the garden tools they will be using and review the rules/expectations/care for each. • Steps for preparing the soil: Remove any sod/grass as necessary and till the first 6-8 inches of soil, remove any large stones and weeds, add compost or partially composted manure and ask students to turn with tools, rake to smooth and aerate the soil, and clean the surrounding beds. Students can also search for earthworms to add to the soil. • ***Additional Suggested Books/Activities:*** "Jack's Garden" by Henry Cole, "Anywhere Farm" by Phyllis Root, "In the Garden" by Elizabeth Spurr
Planting Seedlings & Direct Planting (as necessary)	• Demonstrate for students the correct method for transplanting seedlings. Demonstrate how to use the garden map to figure out where to plant, and how many of each plant goes there. • Remind students about care/handling of garden tools. • Have students work in small groups. If possible, ask parent volunteers to help and place a volunteer with each group. Assign each group a specific section of the garden. • Students take turns transplanting the seedlings/planting seeds. • Students should label the seeds/seedlings they planted with row markers or signs. • Using a hose or watering cans, have students water the area in which they planted. • ***Additional Suggested Books/Activities:*** "Up in the Garden and Down in the Dirt" by Kate Messner, "Anywhere Farm" by Phyllis Root, "Jack's Garden" by Henry Cole, "Up, Down, and Around" by Katherine Ayres
Field Trip to Local Farm	• Bring students to the farm that you have been collaborating with all year. • If possible, have students see the various tools and machines that are used on the farm. Ask students to think about why a farm might have machinery to help, and why we wouldn't use that same equipment at school. • Have students compare/contrast the farm to that of the school garden. • *Assessment:* Write in Nature Notebooks about how our school garden is the same/different from the local farm.
Cooking Over the Campfire: Seasonal Farm Fresh Meal	• Depending on what is available at the local farm, select some items to make/cook outdoors with students. If you cannot find something to cook over the fire, have students use the vegetables to prepare some dish to sample/share.

Routine Care & Maintenance of Garden	• Take regular trips out to the garden to help maintain the space (watering and weeding as needed). • Bring Nature Notebooks and ask students to draw observations from the garden (how the plants are growing, any bugs/insects they find, etc.). • ***Additional Suggested Books/Activities:*** Give students unifix cubes or rulers for measuring and keeping track of plant growth (can make a chart to record), Garden Diary to keep outdoors in a mailbox for community members and other classes to write observations in.

Supporting resources:

- ***Educator Resources:***
  - "Getting Started: A Guide for Creating School Gardens as Outdoor Classrooms," https://www.ecoliteracy.org/sites/default/files/uploads/getting-started-2009.pdf
  - 4-H Growing Connections: A Garden Enhanced Nutrition Education Program (UVM Extension) by Michelle Monagas
  - How to Grow a School Garden: A Complete Guide for Parents and Teachers by Arden Bucklin-Sporer
  - The Growing Classroom: Garden-Based Science by Roberta Jaffe and Gary Appel
- ***Children's Books for Read-Alouds (Fiction and Non-Fiction) :***
  - Anywhere Farm by Phyllis Root
  - Bugs in the Garden by Catherine Hopkat
  - Concept Science books by Collin Walker: How New Plants Grow, Gardening is Fun, Living Things, Living or Not Living
  - Eating the Alphabet: Fruits and Vegetables from A-Z by Lois Ehlert
  - How a Seed Grows by Helene Jordan
  - If You Plant a Seed by Kadir Nelson
  - In the Garden by Elizabeth Spurr
  - Jack's Garden by Henry Cole
  - One Bean by Anne Rockwell
  - Plant the Tiny Seed by Christine Matheson
  - Planting a Rainbow by Lois Ehlert
  - Round the Garden by Omri Glaser
  - Strega Nona's Harvest by Tomie DePaola
  - The Carrot Seed by Ruth Krauss
  - The Little Gardener by Emily Hughes
  - The Tiny Seed by Eric Carle
  - Up in the Garden and Down in the Dirt by Kate Messner
  - Up, Down, and Around by Katherine Ayres
- ***Content Specialists:***
  - Erika Bodin--Garden Specialist