

Environmental Education and Gardening with Children

A Curriculum for Resilience, Empathy and Health



by Janet Fuchs

Environmental Education Director

Gersh & Sarah Lemberg Children's Center, Inc.

Waltham, MA

Illustrations by Elyse Hahn

Environmental Education Intern



Copyright © 2021 Gersh & Sarah Lemberg Children’s Center, Inc. All rights reserved. This book or any portion thereof may not be reproduced or used in any manner whatsoever without the express written permission of the publisher except for the use of brief quotations in a book review.

Copyright laws help to safeguard the livelihoods of authors and the integrity of our non-profit organization. Please respect our Copyright and refrain from sharing and or otherwise reproducing in print the eBooks you purchase and download from us, except for your own personal use.

Gersh & Sarah Lemberg Children’s Center, Inc.
at Brandeis University
457 Old South St. MS 044
Waltham, MA 02453-2728

For questions or permissions, contact:
Lemberg Children’s Center Executive Director
<http://www.lembergcc.org/>
email: lemberg@brandeis.edu

office phone: 781-736-2200



Table of Contents

Table of Contents	iii
Introduction.....	1
Why is Environmental Education Important?.....	1
About the Lemberg Firefly Scientists’ Garden and Playground.....	3
Teaching and Learning with The Firefly Scientists’ Curriculum	4
How This Book Is Designed and Organized	4
Using This Book in Schools, Childcare Centers and at Home.....	4
Time Needed for Each Lesson	4
A Note About Web Links.....	4
Concepts Covered in These Lessons.....	5
COVID-19 and Outdoor Learning	8
Skills Development and Science Curriculum Standards.....	9
Social and Emotional Learning Standards	9
Massachusetts Early Education Science Standards.....	9
Next Generation Science Standards	10
FALL	11
Exploring Seed Pods.....	12
Composting: Why and How	16
Life Under A Log: A Microhabitat.....	22
Exploring Apples: A Sensory Feast.....	27
Exploring Trees: How Trees Help Us	31
Falling Leaves: Leaf Hunt, Leaf Prints, Why Leaves Change Color	35
Putting the Garden to Bed	40
Fall Harvest Scavenger Hunt and Food Projects	44
Fall Art Projects: Flowers, Pumpkins, Corn and Leaves.....	53
Flower and Leaf Prints	53
Pumpkin Art	54
Corn Painting.....	55
Leaf Prints (Paint Prints and Rubbings).....	55
Nature Collage.....	56



A Garden Alphabet Book.....	57
WINTER.....	60
Winter Birds: Listening, Feeding, Observing and Drawing.....	61
Exploring Seeds: Window Sprouts.....	67
Growing Edible Sprouts.....	71
Plant Plumbing: How Plants Get Their Food.....	75
Paper Tube Planting.....	79
Building a Soda Bottle Terrarium.....	83
All About Worms: Three Activities with the Worm Bin.....	89
A Fungus Among Us: Exploring Mushrooms.....	96
Indoor Salad Box.....	101
Art Projects: Plant-Based Dyes and Vegetable Stamps.....	105
The 3Rs: Reduce, Reuse and Recycle.....	111
Ice and Snow: Exploring Freezing and Melting.....	116
SPRING.....	121
What Is A Plant and What Is Not A Plant?.....	122
Scavenger Hunt: Plants, Animals, and More.....	127
Exploring the OWL in Soil.....	131
First Flowers of Spring.....	138
Nature Journals.....	142
First Harvest: Winter Kale, Carrots, and Perennial Herbs.....	146
Spring Food Projects.....	149
Early Outdoor Planting: Peas, Lettuce, Spinach, Radish.....	152
Strawberries: How a Flower Becomes a Fruit.....	156
Three Sisters' Garden: A Native American Tradition.....	160
SUMMER.....	166
Preparing the Garden for Planting.....	167
Planting Seeds and Seedlings.....	171
Garden Scavenger Hunt.....	175
Summer Garden Care.....	179
Watering Basics.....	180
Thinning Seedlings.....	180
Harvesting Safely.....	181



Insecticidal Soap	181
Powdery Mildew Treatment #1	182
Powdery Mildew Treatment # 2.....	182
Compost Fertilizer and Worm Casting Fertilizer	182
Pollinators and Wildflower Gardens	185
Bug Hunt: Insects, Worms, Caterpillars and Butterflies	191
Habitats: Building a Bug Hotel	196
Worm Care and Making Worm Fertilizer	200
Exploring Compost: Building the Pile and Watching Decomposers.....	206
Summer Harvests and Tastings	211
Eat a Rainbow.....	215
Vegetables and Fruits from Different Places.....	220
Summer Food Projects: Spring Rolls and More	224
RESOURCES	229
Book List.....	229
Printable Graphic Aids.....	237
Bug Hunt Identification.....	237
Compost Critter Identification.....	237
Eat A Rainbow Cut-out Pages.....	238
Parts of A Plant Worksheets.....	240
Pollinator Game Flower Cut-out Template	241
Salad Box Coloring Pages.....	242
Scavenger Hunts.....	243
Soda Bottle Terrarium Poster	246
Soil Food Web Poster.....	247
Soil Composition Chart.....	247
Soil Sorting Worksheets.....	248
Steps for Folding Paper Planting Tubes	250
Why Leaves Change Color Poster.....	250
Other Resources	251
Birds	251
Building a Learning Garden	251
Early Childhood Science Education.....	251



Fungi and Species Interdependence	252
Nutrition	252
Parts of a Seed	252
Planting Guides	252
Recommended Organic Seed Companies	252
Recommended Programs, Products and Curriculum.....	253
Research in Support of Learning Gardens and Environmental Education.....	253
Science Curriculum Standards	253
Recipes: Raw	254
Spring Rolls.....	254
Kale Smoothies	255
Pesto	256
Tomato, Onion, Pepper Salsa	257
Tzatziki.....	258
Rainbow Salad.....	259
Recipes: Cooked	260
Kale Chips	260
Eggplant Chips	261
Baba Ganoush	262
Three Sisters' Soup (squash, bean, and corn).....	263
Zucchini Muffins.....	264
Treatments for Plant Diseases and Pests.....	265
Insecticidal Soap	265
Powdery Mildew Treatment #1	265
Powdery Mildew Treatment # 2.....	265
Compost Fertilizer and Worm Casting Fertilizer	265
Skills Development Checklist.....	266
Acknowledgements.....	267
About the Author	268