

Garden Lesson G7-FI

Fall Intensive



Communication

Students participate daily in a small circle Q&A, reflecting and sharing what they are looking forward to this week, retelling a favorite memory from 6th grade garden class and updating the group on how they are feeling.

Sustainability

Students work in the garden every day for a week, discussing how their chosen track applies to caring for the environment and completing garden tasks in anticipation of the spring semester.

Nourishment

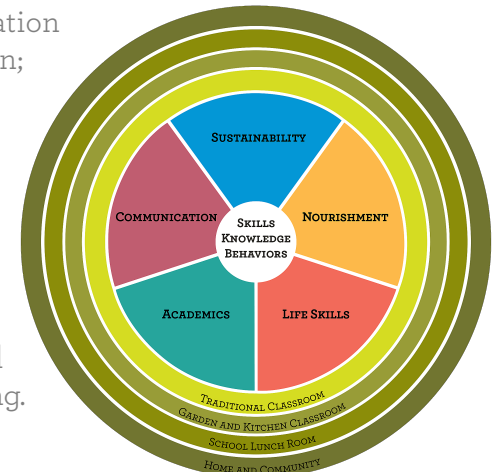
On Friday, the last day of the intensive, students and teachers share a sit-down meal with the whole class, made of crops harvested and prepared by students.

Life Skills

Students work collaboratively with a team, focus on listening, speaking and following directions, and participate in class routines.

Academics

These Intensive tracks fulfill Next Generation Science Standards for structure and function; cycle of matter and energy transfer in ecosystems; influence of science, engineering and technology; asking questions and defining problems; analyzing data from tests; Common Core State Standards for following a multistep procedure; translating quantitative or technical information; collaborative discussion; speaking and listening; language; acquiring words and phrases and Health Education Content Standards for healthy eating.



Fall Intensive Abstract

Summary

In this 7th grade garden intensive, students come to garden class every day for a week and focus on a specific track that they choose for themselves from a set of four: Gardening and Cooking, All About Chickens, Climate Change or Mini Habitats. As part of the intensive all students participate in the Cuttings Lab, where they create plant clones and learn that the cellular DNA of a small twig is genetically identical to the mother plant from which it came.

Objectives

After this week of lessons, students will be able to:

- Point out a specific project or area they worked on in the ESY garden during their Fall Intensive
- Prepare a meal using crops harvested from a garden
- Work successfully as a team and be comfortable getting to know teammates
- Explain why plants are reproduced asexually and use cuttings to propagate plants
- Be able to speak in depth on one of the following: cultivation, chickens, climate change or permaculture

Assessments

During this week of lessons, students will:

- Complete a project or area of study for their Fall Intensive:
- Work together to prepare a class meal on the last day of Fall Intensive
- Be part of a team for the whole week
- Identify three reasons for reproducing plants asexually in the garden and successfully propagate a plant asexually
- Complete projects and discussion focusing on one of the following: cultivation, chickens, climate change or permaculture

Communication is strengthened by students participating daily in a small circle Q&A, reflecting and sharing what they are looking forward to this week, retelling a favorite memory from 6th grade garden class, and updating the group on how they are feeling each day. **Sustainability** is highlighted by working in the garden every day for a week, discussing how the chosen track

applies to caring for the environment and completing garden tasks in anticipation of the spring semester. *Nourishment* is enhanced by sharing a sit-down meal with the whole class at the end of the week, made of crops harvested and prepared by students. *Life Skills* are sharpened as students work collaboratively with a team, focus on listening, speaking and following directions, and participate in class routines.

Academics fulfill Next Generation Science Standards for structure and function; cycle of matter and energy transfer in ecosystems; influence of science, engineering and technology; asking questions and defining problems; analyzing data from tests; Common Core State Standards for following a multistep procedure; translating quantitative or technical information; collaborative discussion; speaking and listening; language; acquiring words and phrases and Health Education Content Standards for healthy eating. See **Connections to Academic Standards** below for details.

Edible Schoolyard curriculum emphasizes developing community and personal stewardship, along with skills that will help students navigate different situations throughout their lives; creating an atmosphere of cooperation and **unity**; following a set of **rituals and routines**; using garden **tools**; understanding the **impact of pollination** on our food supply; **harvesting** and preparing crops; understanding the purpose of soil **cultivation**; and **propagating** plants.

This lesson follows the BEETLES Project's *Learning Cycle* (Invitation-> Exploration -> Concept Invention -> Application -> Reflection) and uses their *Discussion Routines* (Think-Pair-Share, Whip-Around). All are highlighted in *Green** with an asterisk for easy identification. See the documents BEETLES_Discussion_Routines.pdf and BEETLES_Learning_Cycle.pdf included in **Resources** below for more information. Games and activities from other sources are also identified in *Green*, without an asterisk.

Connections to Academic Standards

Next Generation Science Standards, Middle School

Disciplinary Core Ideas:

- LS1.A: Structure and Function
 - All living things are made up of cells, which is the smallest unit that can be said to be alive. An organism may consist of one single cell (unicellular) or many different numbers and types of cells (multicellular).
- LS2.B: Cycle of Matter and Energy Transfer in Ecosystems
 - Food webs are models that demonstrate how matter and energy is transferred between producers, consumers, and decomposers as the three groups interact within an ecosystem. Transfers of matter into and out of the physical environment occur at every level. Decomposers recycle nutrients from dead plant or animal matter back to the soil

in terrestrial environments or to the water in aquatic environments. The atoms that make up the organisms in an ecosystem are cycled repeatedly between the living and nonliving parts of the ecosystem. (MS-LS2-3)

Crosscutting Concepts:

Connections to Engineering, Technology, and Applications of Science:

- Influence of Science, Engineering, and Technology on Society and the Natural World
 - All human activity draws on natural resources and has both short and long-term consequences, positive as well as negative, for the health of people and the natural environment. (MS-ESS3-1),(MS-ESS3-4)
 - The uses of technologies and any limitations on their use are driven by individual or societal needs, desires, and values; by the findings of scientific research; and by differences in such factors as climate, natural resources, and economic conditions. Thus technology use varies from region to region and over time. (MS-ESS3-2),(MS-ESS3-3)

Science and Engineering Practices:

- Asking Questions and Defining Problems
 - Asking questions and defining problems in grades 6–8 builds on grades K–5 experiences and progresses to specifying relationships between variables, clarify arguments and models.
 - Ask questions to identify and clarify evidence of an argument. (MS-ESS3–5)
 - Define a design problem that can be solved through the development of an object, tool, process or system and includes multiple criteria and constraints, including scientific knowledge that may limit possible solutions. (MS-ETS1-1)

Performance Expectations:

- MS-EST1-3: Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.

Common Core State Standards, English Language Arts and Literacy, Grade 7

- RST.7.3 Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
- RST.7.7 Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.
- SL.7.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 7 topics, texts, and issues*, building on others' ideas and expressing their own clearly.

- SL.7.1.b Follow rules for collegial discussions, track progress toward specific goals and deadlines, and define individual roles as needed.
- SL.7.1.c Pose questions that elicit elaboration and respond to others' questions and comments with relevant observations and ideas that bring the discussion back on topic as needed.
- SL.7.1.d Acknowledge new information expressed by others and, when warranted, modify their own views.
- SL.7.2 Analyze the main ideas and supporting details presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how the ideas clarify a topic, text, or issue under study.
- SL.7.4 Present claims and findings, emphasizing salient points in a focused, coherent manner with pertinent descriptions, facts, details, and examples; use appropriate eye contact, adequate volume, and clear pronunciation.
- SL.7.6 Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grade 7 Language standards 1 and 3 on page 53 for specific expectations.)
- L.7.1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
 - L.7.1.a Explain the function of phrases and clauses in general and their function in specific sentences.
 - L.7.1.b Choose among simple, compound, complex, and compound-complex sentences to signal differing relationships among ideas.
 - L.7.1.c Place phrases and clauses within a sentence, recognizing and correcting misplaced and dangling modifiers.*
- L.7.3 Use knowledge of language and its conventions when writing, speaking, reading, or listening.
 - L.7.3.a Choose language that expresses ideas precisely and concisely, recognizing and eliminating wordiness and redundancy.
- L.7.6 Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.

Health Education Content Standards for California Public Schools, Grades 7&8,

- 1.8.N Identify ways to prepare food that are consistent with current research-based guidelines for a nutritionally balanced diet.
- 7.1.N Make healthy food choices in a variety of settings.
- 7.2.N Explain proper food handling safety when preparing meals and snacks.

Connections to *Edible Schoolyard* Standards

Edible Schoolyard 3.0

In the Edible Schoolyard Program

- 1.0 Students work with each other and teachers to develop community and personal stewardship, along with skills that will help them navigate different situations throughout their lives.
- 1.1.1 – 1.3.12 This lesson fulfills all Edible Schoolyard Program standards, numbers 1.1.1 through 1.3.12. See *The Edible Schoolyard Berkeley Standards* for details.

With focus on:

- Techniques 1.2.0 Follow a set of rituals and routines that help work go smoothly and develop into lifelong habits.
- Concepts 1.3.8 Create an atmosphere of cooperation and **unity**. We elevate the class experience for all by offering and receiving encouragement, and welcoming the ideas and contributions of others.

In the Garden Classroom, 7th grade

- Tools 3.2.1 Identify, use, care for, and begin to choose specific garden **tools** and equipment.
- Techniques 3.2.4 **Harvest** and prepare crops with increased independence; understand the seed to table concept, begin to recognize ripeness and understand seasonality.
- Techniques 3.2.5 Understand the purpose of soil **cultivation**, edge and turn beds with increased independence; recognize good soil structure; and assess when amendments are needed for soil.
- Techniques 3.2.6 Sow seeds and transplant seedlings with increased independence; graft plants and **propagate** cuttings with guidance; identify necessary ingredients for soil mixes; understand why the greenhouse provides an optimal environment for plant propagation.
- Concepts 3.3.9 Recognize the garden as a habitat for pollinators, understand the **impact of pollination** on our food supply, develop appropriate responses to them, and consider the multitude of habitats throughout the garden.

Fall Intensive Lesson

Materials

- G7-FI Track Descriptions
- G7-FI Ballots
- Materials needed for each Track

Before you begin

- Create the Fall Intensive Track Descriptions (each track is led by a particular teacher)
- Create the Fall Intensive Ballots
- Copy the Track Descriptions and Ballots for all 7th grade students
- Plan itineraries for each track (this can be done by the leader of each track)
- Collect all the materials needed for each track
- Distribute materials to Track Stations

Timeline Overview

Five Days of Class

Total Daily Duration: 90 minutes

1. *Invitation** (10 minutes)
2. *Concept Invention** 10 minutes)
3. *Application* (60 minutes)
4. *Reflection** (10 minutes)

Procedures

At the Opening Circle

1. *Invitation**: (10 minutes)
 - a. Welcome students and ask a check-in question about their time in the garden in their 6th grade year.
 - b. Break into groups and send students to their track stations.

In the Field (70 minutes total)

At the Track Stations

2. **Concept Invention***: (10 minutes)

Each group leader spends the first part of class covering material necessary for the day's work or investigation.

a. **Gardening and Cooking Track** With Mr. Jason

During this week, students will focus on gardening and cooking activities. Our week will start with an overview that will help set goals and will include fun teambuilding and trust games. With a strong cohort of students, we will work together to complete various garden tasks that are needed before the long winter break. Some of the garden tasks that can happen during this week are transplanting out our beet patch, sowing cover crop, apple tree care for our espalier orchard, and laying down straw and woodchip mulch, with other tasks TBD. For the food activity, our group will be responsible for making food for the entire class. We will take the time to harvest ingredients from the garden and make kale pesto, so that as an entire class, we can all sit together and eat on the final day.

b. **All About Chickens** With Ms. Rachel

Do you love spending time with chickens in the garden? Are you curious to learn more about them? The "All About Chickens" track will spend our week together as chicken zoologists – observing the chickens, discussing their evolution and characteristics, exploring their biological systems and celebrating their important role in our garden ecosystem. Some discussion of meat processing will be involved, along with a dissection.

c. **Climate Change** With Mr. Geoff

In this week we will explore the garden through the lens of California's climate and how we can adapt to climate change and the effects of global warming in our region. Through a series of games and activities students in this group will leave the week with knowledge of things we can do and are doing to adapt to our environment. Most of all we're going to have some FUN!

d. **Mini-Habitats** With Farmer Tanya

This week, we're going to work with nature to improve our garden by creating several unique mini-habitats. First, we'll explore how to find the contour on a slope using a simple A-frame tool, then mark off the contour and dig out swales, which are like long ditches that capture and hold rain water in their basins. In addition, we'll have an opportunity to plant an apple tree and build a fruit tree guild around it that includes bulbs, medicinal and flowering plants, and many other plants that attract pollinators or help bring nutrients up to the topsoil from deep below. We may also have the opportunity to build out miniature gray water basins around the drinking faucets in the garden if the group decides they would rather do this.

3. **Application***: (60 minutes)

Students and group leaders work on their projects.

At the Closing Circle

4. **Reflection***: (10 minutes)

- a. Every day all groups get together in the Ramada to share highlights of their work in the garden.
- b. Some days there is a tasting, or a game or some other special activity.

Contributors

All lessons at the Edible Schoolyard Berkeley are developed in collaboration with the teachers and staff of the Edible Schoolyard and Martin Luther King Jr. Middle School.

Learning Cycle and Think-Pair-Share discussion routine © The Regents of the University of California. All materials created by BEETLESTM at The Lawrence Hall of Science.

Resources

G7-FI_Track_Descriptions.pdf

G7-FI_Ballot.pdf

BEETLES_Learning_Cycle.pdf (See lesson G6-0)

7th Grade Week 11/23/15 Track Pitches

Gardening and Cooking Track

With Mr. Jason

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Name: _____ Teacher: _____ Period: _____

After each option below, **please circle** if it is your 1st, 2nd, 3rd, or 4th choice.
(You can only have one 1st choice, one 2nd choice, etc.)

All About Chickens (with Ms. Rachel): 1st 2nd 3rd 4th

Climate Change (with Mr. Geoff): 1st 2nd 3rd 4th

Gardening & Cooking (with Mr. Jason): 1st 2nd 3rd 4th

Mini-Habitats (with Ms. Tanya): 1st 2nd 3rd 4th

Thank you! We will do our best to place you in one of your top choices.

Name: _____ Teacher: _____ Period: _____

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