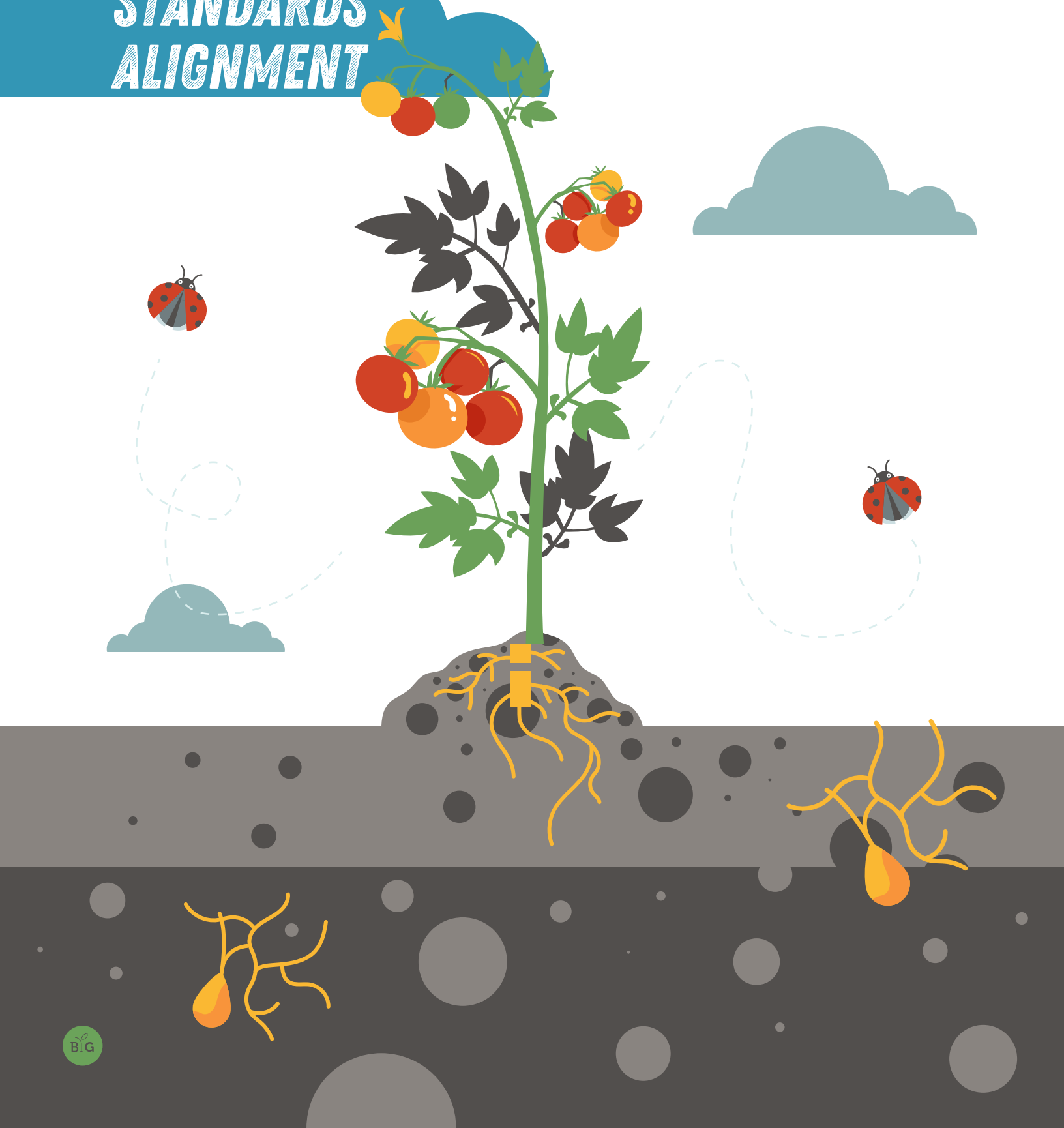
READY, SET, GROW!

STANDARDS ALIGNMENT

K-8



STANDARDS ALIGNMENT MATRIX - READY, SET, GROW!

NEXT GENERATION SCIENCE STANDARDS

Standard	Definition	Example from Ready, Set, Grow!
DCI: LS1.A	All organisms have external parts. ~~Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air.~~ Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow. (1-LS1-1)	K-2 Module 2-2 Students identify plant parts based on an in-class lesson and garden observation. In the lesson summary, students make a prediction about why plant parts look different and what that is affected by its environment.
	Plants ~~and animals~~ have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction. (4-LS1-1)	In each lesson series, students observe plant parts in the garden and read the Garden Thymes to understand how each part functions, its role in the plant lifecycle, and with other plant parts. In each science extension, students engage in a lab to dissect or otherwise observe the similarities and differences with each plant part. They view structures such as seed coats, or vascular bundles and draw conclusions about how the plant part contributes to the life of the plant.
	Within cells, special structures are responsible for particular functions, and the cell membrane forms the boundary that controls what enters and leaves the cell. (MS-LS1-2)	In Roots We Eat: Garden as a Lab, students conduct an investigation related to the osmosis process using root vegetables (or potatoes). Students will gather evidence supporting the claim that osmosis is the process that roots use to absorb water from the soil.
DCI: LS1.B	Growth and Development of Organisms: Adult plants ~~and animals~~ can have young. ~~In many kinds of animals, parents and the offspring themselves engage in behaviors that help the offspring to survive.~~ (1-LS1-2)	K-2 Module 2: Working Together: Plants and Animals students learn about the ways animals and plants support each other in the garden. Specifically, students will learn that animals support plant reproduction through seed dispersal.
	Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles. (3-LS1-1)	Throughout the 3-5 lessons, students experience each plant part and its relationship to the lifecycle of the plant. In 3-5 they investigate the structure of plants growing in the garden. They will note similarities and differences among the

		same part in different plants. One example is a seed dissection lab in which students observe various seeds to find the seed coat, embryo, and cotyledon. While all flowering seeds have these parts, they vary greatly across seed samples. In the Roots We Eat lab, students compare taproots with fibrous roots and make predictions about how each root has the same function, but based on the root type, has different needs when it comes to soil and water intake methods.
DCI: LS1.C	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-LS1-1)	Using the garden as a source of evidence, in K-2, Module 2: Growing a Plant, students learn about what plants need to survive and look for evidence of that in the garden. Students discuss how the needs of plants are similar and different to what humans need to survive.
	Plants acquire their material for growth chiefly from air and water. (5-LS1-1)	Through Roots We Eat, Stems We Eat, and Leaves We Eat, students investigate the absorption and transport systems in plants. They conduct investigations to gather evidence to the claim that plants get what they need from air and water. They will investigate the vascular bundles of various stems and measure water levels. They will also collect data on various leaf vein structures and predict why the structures support the function of the stem. Observations in the garden can also provide a live demonstration of how plants either thrive or do not thrive based on what their environments provide.
DCI: MS-LS1	Plants reproduce in a variety of ways, sometimes depending on animal behavior and specialized features for reproduction. (MS-LS1-4)	In the 6-8 Seed Extension Lab - Seed Dispersal, students conduct and investigation to predict how a seed's structure affects its capacity to disperse and create a new plant. They will test seeds for dispersal via: wind, water, animal fur, or even the plant's own structures such as explosive pods.
	Genetic factors as well as local conditions affect the growth of the adult plant. (MS-LS1-5)	Throughout the 6-8 core and science extensions lessons, students study variation and adaptation among various plants. An example of this is the lesson

		on stem adaptations. Students consider how runners, tubers, rhizomes and others still provide for the plants' transport systems, but in different ways depending on the environment the plant is growing in. In Leaves We Eat, students classify leaves by their margins, veins, blades, etc. From there, students make predictions about what the leaf's structures indicate about the plant's ideal environment and conditions.
	Plants, algae (including phytoplankton), and many microorganisms use the energy from light to make sugars (food) from carbon dioxide from the atmosphere and water through the process of photosynthesis, which releases oxygen. These sugars can be used immediately or stored for growth or later use. (MS-LS1-6)	In Leaves We Eat: Garden as a Lab, students will test for the presence of sugar in leaves and measure how leaves, exposed to varying amounts of light respond to a stimulus that reacts with sugar. In the previous lesson, they noted leaf variations, but in this lab, evidence will show that despite the leaf's shape or other structures, they all make food (sugar) when exposed to the sun. This lab is supported by an article in The Garden Thymes that explains the chemical processes associated with photosynthesis.
	Within individual organisms, food moves through a series of chemical reactions in which it is broken down and rearranged to form new molecules, to support growth, or to release energy. (MS-LS1-7)	
DCI: LS2.A	Interdependent Relationships and Ecosystems: Plants depend on water and light to grow. (2-LS2-1) Plants depend on animals for pollination or to move their seeds around.(2-LS2-2	Using the garden as a source of evidence, in Module 2: Growing a Plant, students learn about what plants need to survive and look for evidence of that in the garden. Students discuss how the needs of plants are similar and different to what humans need to survive. K-2 Module 2: Working Together: Plants and Animals students learn about the ways animals and plants support each other in the garden. Specifically, students will learn that animals support plant reproduction through seed dispersal.
DCI: LS2.C	Ecosystem, Dynamics, Functioning, and Resilience: When the environment changes in ways that affect a place's physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the	In Stems We Eat: Garden to Lab and Roots We Eat: Garden to Lab students conduct an investigation into plant structures that take in and transport water and nutrients. They will see how access to water is critical for plants. In the garden, water must be supplied by

	transformed environment, and some die. (3-LS4-4)	students. Without this resource, plants will not survive. Watering is a critical part of garden care.
DCI: LS3.A	Inheritance of Traits: ~~Young animals are very much, but not exactly, like their parents.~~ Plants also are very much, but not exactly, like their parents. (1- LS3-1)	In 3-5 Flowers and Fruits We Eat: Science Dissection, students explore plant reproduction through the dissection of flowers and fruits. In this lab they will identify the reproductive parts of plants and compare how the new plants are similar and different from each other and the parent plants.
	Inheritance of Traits: Many characteristics of organisms are inherited from their parents. (3-LS3-1)	
DCI: MS-LS3	Organisms reproduce, either sexually or asexually, and transfer their genetic information to their offspring. (secondary to MS-LS3-2)	In 6-8 Flowers and Fruits We Eat: Science extension students investigate the process of ripening and factors that affect the rate of ripening. Flowering plants pass on genetic material through seeds via fruit. Students will see examples of this in their garden and in this lesson.
DCI: LS3.B	Variation of Traits: Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways. (1-LS3-1)	Throughout Garden Bites in each grade band the structure, function, and variation of plants is a consistent theme. In all the core lessons, students observe each plant part and draw evidence about what is similar and different within one plant type and across various plant types. This process assists in the discovery of plant variation and adaptations that improve an organism's likelihood of survival. This also helps students understand which plants are best student for the growing conditions in a Learning Garden.
	Different organisms vary in how they look and function because they have different inherited information. (3-LS3-1)	
	The environment also affects the traits that an organism develops. (3-LS3-2)	
DCI: LS4.B	Natural Selection: Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing. (3-LS4-2)	In Fruits and Flowers We Eat: Science Extension, and Seeds We Eat: Science Extension, students explore the reproductive structures in depth. They learn how flowers act to attack pollinators and how the sweet taste of many fruits encourages animals to consume and spread seeds.
DCI: LS4:C	Adaptation: For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all (3-LS4-3)	In the Garden Journal throughout Garden Bites, students are able to make predictions about what a plant needs based on their observations about each plant part and also upon what they observe in the garden about each plant's lifecycle. When plants are not thriving,

		students will observe that happening in real time.
DCI: LS4.D	Biodiversity and Humans: Populations live in a variety of habitats, and change in those habitats affects the organisms living there (2-LS4-1)	In each introductory lessons within Garden Bites, students actively observe what is in and around the garden. Year over year, some crops will thrive, where others may not. Through these observational experiences, and the subsequent lessons, students will come to understand that habitat is very closely connected to the welfare of plants living there.

COMMON CORE STANDARDS: ELA

Standard	Definition	Example from Garden Bites Premium
RI 1 (3-8 Grade)	RI.5.1 Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.	By using the Garden Journal, which is a part of each lesson in Garden Bites, students will regularly interact with text and draw out main ideas and supporting evidence using a note taking structure. They will also summarize their key learning.
	RI.8.1 Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.	In addition to the Garden Journal, in the 6-8 series, (Making Claims, Seeds We Eat, and Leaves We Eat) students have additional texts they will annotate and draw conclusions from either in the form of writing or a structured discussion.
RI 2 (6-8)	RI.8.2 Determine a central idea of a text and analyze its development over the course of the text, including its relationship to supporting ideas; provide an objective summary of the text.	Through an exploration of two articles and a research database mapping the origin of various roots, students will piece together several supporting ideas from multiple sources into one claim. In most ELA extension lessons, students also have to produce writing or engage in a speaking/listening task that synthesizes texts from the entire lesson series.
RI 4	RI.5.4 Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a *grade 5 topic or subject area*.	The teaching domain-specific and academic vocabulary is embedded in each lesson that uses the Garden Thymes series.

	RI.8.4 Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; ~~analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.~~	Through the use of literature, particularly in the 3-5 band, word understandings are also developed through stories, and illustrations.
RI 7	RI.5.7 Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.	In each 3-5 Garden Bits lesson series students will gather information from a variety of sources (teacher/speaker presentation, texts, notes, videos, and stories). They will synthesize that information in formal note taking structures to formulate responses to questions about science concepts as well as health and nutrition.
RI 7	RI.6.7 Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.	In 6-8 Roots We Eat, students locate information in various texts as well as an interactive data map which uses visuals and interactive graphics. Students will identify ways that graphics and data displays can convey meaning effectively, particularly when paired with other text sources.
W1	W.8.1 Write arguments to support claims with clear reasons and relevant evidence. (The research standards are also addressed in this task which could increase the time needed to complete the lesson. If the teacher extends to the full task, W8.7, W.8.8 could also be reached. W.8.9 will be partially reached as this task does not call for any literary argumentation.)	In Leaves We Eat: Gardener's Take Action, students gather information from the lesson series and other sources to create an infographic which compels people to eat more leafy greens. Their product will be developed by looking at other argumentative graphic examples and following the writer's checklist guiding them to include key elements of argument pieces. Students in 6-8 are also asked to create summaries using the CER Structure. While not an exact parallel to argumentation as determined in the ELA standards, the structure will improve skills in gathering and using evidence to develop a claim. Formal argument writing is also called for in the Gardeners Take Action lessons for Fruits and Flowers We Eat and Leaves We Eat.
W2	W.5.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly.	Students will create at least two formal pieces of informational writing in the 3-5 grade band. One will be during

		the Making Observation Series and the other in Roots We Eat: Gardeners Take Action. Students also write to inform informally in their note taking guides throughout.
	W.8.2 Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.	The summary in the Garden Journal in the 6-8 series takes the form of a CER model after information has been collected. CER can be used as an argumentative frame or more explanatory of evidence. Students also have formal informational writing tasks in Stems We Eat: Gardeners Take Action.
W.3	5.3 Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.	In Leaves We Eat: Gardeners Take Action, students have a writing task and writer's checklist that specifically aligns to the grade level elements of this standard by creating a story about the life of a seed. Literary models are provided for teachers to select from.
W.3	8.3 Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences. C and D	In Leaves We Eat: Gardeners Take Action students will engage in poetry and art related to leaf shapes and functions. It cannot be guaranteed they will create only narrative poetry so only the language elements of this narrative standard may be reached by students. Teachers could create parameters to ensure the full standard was reached.
W.8	W.2.8 Recall information from experiences or gather information from provided sources to answer a question.	Through data collection via the Garden Journal, students begin to gather and use information from a variety of sources.
W.8	W.5.8 Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and ~~provide a list of sources.~~	Through data collection via the Garden Journal, students begin to gather and use information from a variety of sources. Summaries at the 3-5 grade band should be more developed and inclusive of a variety of sources. Students will not be asked to provide a list of sources in the Garden Bites series. *The Garden Journal structure extends and expands in the 6-8 series. However since the standard asks for

		students to independently find and assess the reliability of sources, therefore, this standard cannot be met with the lessons alone.
SL 1	SL.2.1 Participate in collaborative conversations with diverse partners about *grade 2 topics and texts* with peers and adults in small and larger groups. SL.5.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 5 topics and texts*, building on others' ideas and expressing their own clearly. SL.8.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.	In each Garden Bites core and extension lessons, teachers are guided to use discussion protocols that encourage students to follow agreed upon rules strengthen speaking and listening skills. This addresses the A and B parts of this standard at all grade levels. In specific lessons, students engage in discussion tasks as a summative activity which usually takes the form of a Socratic Seminar or Philosophical Chairs activity. In these areas, the C and D parts of the standard may be reached.
SL.4 and 6	SL.5.4 Report on a topic or text or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace. SL 5.6 Adapt speech to a variety of contexts and tasks, using formal English when appropriate to task and situation.	In the Fruits and Flowers We Eat: Gardeners Take Action lesson, students will formally consider the health benefits of fruits available for consumption using the Philosophical Chairs activity. This requires students to come prepared with text, bring in appropriate facts and details and support the claim.
SL.4 and 6	SL.8.4 Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation. SL.8.6 Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.	In Seeds We Eat: Gardeners Take Action, students formally discuss access and cost of healthy food and healthy food choices, building off a selection of articles on the topic. As these articles have more claims and supporting evidence, the skills needed to successfully participate are deeper.
SL 5	SL5.5Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes.	In Stems We Eat: Gardeners Take Action, students will prepare a demonstration speech or video using available technology and visual supports.
L 5	L.5.5 Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.	In the narrative writing task in Seeds We Eat: Gardeners Take Action, students will be cued to the language

		details of this standard in their Writers Checklist.
	L.5.8 Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.	In the narrative writing task in Leaves We Eat: Gardeners Take Action, students are cued to explore the scientific and figurative language elements associated with the poetry task.
L.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.	Throughout Garden Bites at all grade bands, students are working with developing domain-specific and academic vocabulary through readings, discussions, videos, images, and garden-based observations.

NATIONAL HEALTH EDUCATION STANDARDS

Standard	Definition	Example from Garden Bites Premium
Standard 2:	2.2.1 Identify how the family influences personal health practices and behaviors. 2.2.2 Identify what the school can do to support personal health practices and behaviors.	Through prompts in discussion and the Garden Journal students are regularly asked to connect home to school. An example would be: What is similar or different about the way your family eats leaves and the types of leaves we are growing and eating from the garden at school. The presence of a school garden as a learning and tasting environment improves the overall school-food environment.
	2.5.2 Identify the influence of culture on health practices and behaviors.	The Roots We Eat: Gardeners Take Action, specifically addresses the cultural origin of roots as part of a diet.
Standard 5	5.8.1 Identify circumstances that can help or hinder healthy decision making. 5.8.2 Determine when health-related situations require the application of a thoughtful decision-making process.	Many lessons specifically address decision-making related to consumption of fruits and vegetables. The Seeds We Eat extensio series causes students

		to consider nutrition, cost, access and allergens as part of their decision-making in the kitchen and in the discussion activity.
Standard 7	7.2.1 Demonstrate healthy practices and behaviors to maintain or improve personal health. 7.2.2 Demonstrate behaviors that avoid or reduce health risks.	This standard asks students to demonstrate healthy behaviors. Therefore, whenever students are in the kitchen and making decisions about ingredients and nutrition, they are demonstrating healthy skills. There are also times where they are asked to make a commitment for the week to eat a particular plant part.
	7.5.1 Identify responsible personal health behaviors. 7.5.2 Demonstrate a variety of healthy practices and behaviors to maintain or improve personal health.	
	7.8.1 Explain the importance of assuming responsibility for personal health behaviors. 7.8.2 Demonstrate healthy practices and behaviors that will maintain or improve the health of self and others.	
Standard 8	8.5.1 Express opinions and give accurate information about health issues. 8.5.2 Encourage others to make positive health choices. 8.8.1 State a health-enhancing position on a topic and support it with accurate information. 8.8.2 Demonstrate how to influence and support others to make positive health choices.	In 3-5 Fruits and Flowers We Eat: Gardeners Take Action and 6-8 Seeds We Eat: Gardeners Take Action students engage in discussion related to health benefits of fresh food. In a variety of summaries in the Garden Journal, students are encouraged to identify other people (peers and adults) to share their message with. In all the informative and argumentative writing prompts in the 3-5 and 6-8 grade bands, students engage in stating and sharing a position to inform and persuade people they care about to make healthy food choices.