LIVING CLASSROOM & COMMON CORE + NEXT GENERATION SCICENCE STANDARDS



The hands-on, real world, and interdisciplinary nature of Living Classroom lessons are made to order for the new Common Core/Next Generation Science standards (NGSS), which integrate content, practices, and cross-cutting concepts to **ensure that science, math and language arts education is meaningful, engaging, and effective.** We use recommended best practices for helping to close the achievement gap in science and math.

The garden provides an outstanding context for teaching Next Generation Science curriculum and other subjects.

In Living Classroom native habitat and edible gardens, the real meaning of scientific concepts like photosynthesis, nutrient cycling, seasonal changes, structure and function and interdependence of living things are revealed. Students can gain meaningful experience in the science and engineering practices outlined in the NGSS as they ask questions, plan and conduct investigations and solve real world problems in the garden which serves as their own microcosm for the larger world.

Many NGSS Performance Expectations can be best achieved by connecting students to natural areas which we create on their school campuses. Just a few of the nature-focused performance expectations students will need to meet by using science and engineering practices include:

- Communicate solutions that will reduce the impact of humans on the land, water, air and/or other living things in the local environment. Kindergarten (K-ESS-3):
- Make observations of plant and animals to compare the diversity of life in different habitats. Grade 2 (2-LS4-1)
- Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all. Grade 3 ((3-LS4-3)
- Apply scientific principles to design a method for monitoring and minimizing human impact on the environment. Grade 5 (5-ESS3-3)

In addition, the native habitat gardens create small-scale ecosystems or ecological learning lab, which provides an "island" of biodiversity and a place for students to be participants in citizen science projects. Through iNaturalist, for example, students join a world-wide community documenting and identifying species of plants and animals in their school garden, providing data on how even relatively small areas of biodiverse flora can impact wildlife biodiversity and concentrations. It also engages students in a real-world science

effort that will have a lasting impact on their understanding and appreciation of the importance of science in informing habitat conservation and restoration and many other scientific study topics.

Common Core standards emphasize the need to provide students with engaging, real-world applications for the skills they are learning. What the children notice in the garden leads to conversations back in the classroom about ideas and evidence-based predictions; the garden is a way to discuss how living things respond to the environment as the weather changes and many, many other connections.

In the garden, students can apply math skills—estimation and measurement, graphing relative growth rate of plants with bar graphs and line plots, again in a context that matters to them. A class can rely entirely on the plants students planted for learning about measuring and charting growth. The result is a memorable lesson on estimating, measuring, collecting, and graphing data—and the bonus is tasting freshly harvested vegetables and fruits from the garden.

Our garden-based lessons meet Common Core English Language Arts standards as students use adjectives to describe tastes, connect the parts of the plant—the leaves, the flowers, stems and seeds that they are eating in a healthy snack, or describe the texture of a leaf--they "identify real life connections between the words they are learning and their use" as recommended in the Common Core standards. A real life experience in the garden makes students much more motivated and excited to write.

Extending classroom lessons to the school garden are part of a profound shift in classroom practice. Employing an inexpensive, low-tech resource right outside the classroom doors, is an essential resource for students to practice reading, writing, math and science skills and a natural platform for students to learn skills the Common Core standards expect all students to master.

Living Classroom provides a context, through its real-world, garden-based learning, that matters to students.

We are providing a balance of real-world, sensory experiences with our increasingly digital world. Students learn the connections between what they experience in their school yard and how those phenomena manifest themselves in the broader global context. When learning matters to students, then it is approached with curiosity and enthusiasm.

LIVING CLASSROOM

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