Educational Benefits of a School Garden

Spending time in nature can help students do better in school!

UCCE Master Gardener Program of Riverside County

Vetted by Riverside County Office of Education-STEM

Learning Goal

Educators will become familiar with the current research on the importance of consistent, integrated outdoor learning experiences for students.

Why Is This Important?

A growing body of evidence indicates that exposure to nature is not just good for children's health; it also improves their ability to learn.

"How do green space and nature help kids learn? In a surprising variety of ways, we're discovering. Nature improves children's psychological and physical well-being, for sure—and that can impact learning. But it also seems to affect how they attend to and engage in the classroom, how much they can concentrate, and how well they get along with teachers and peers."

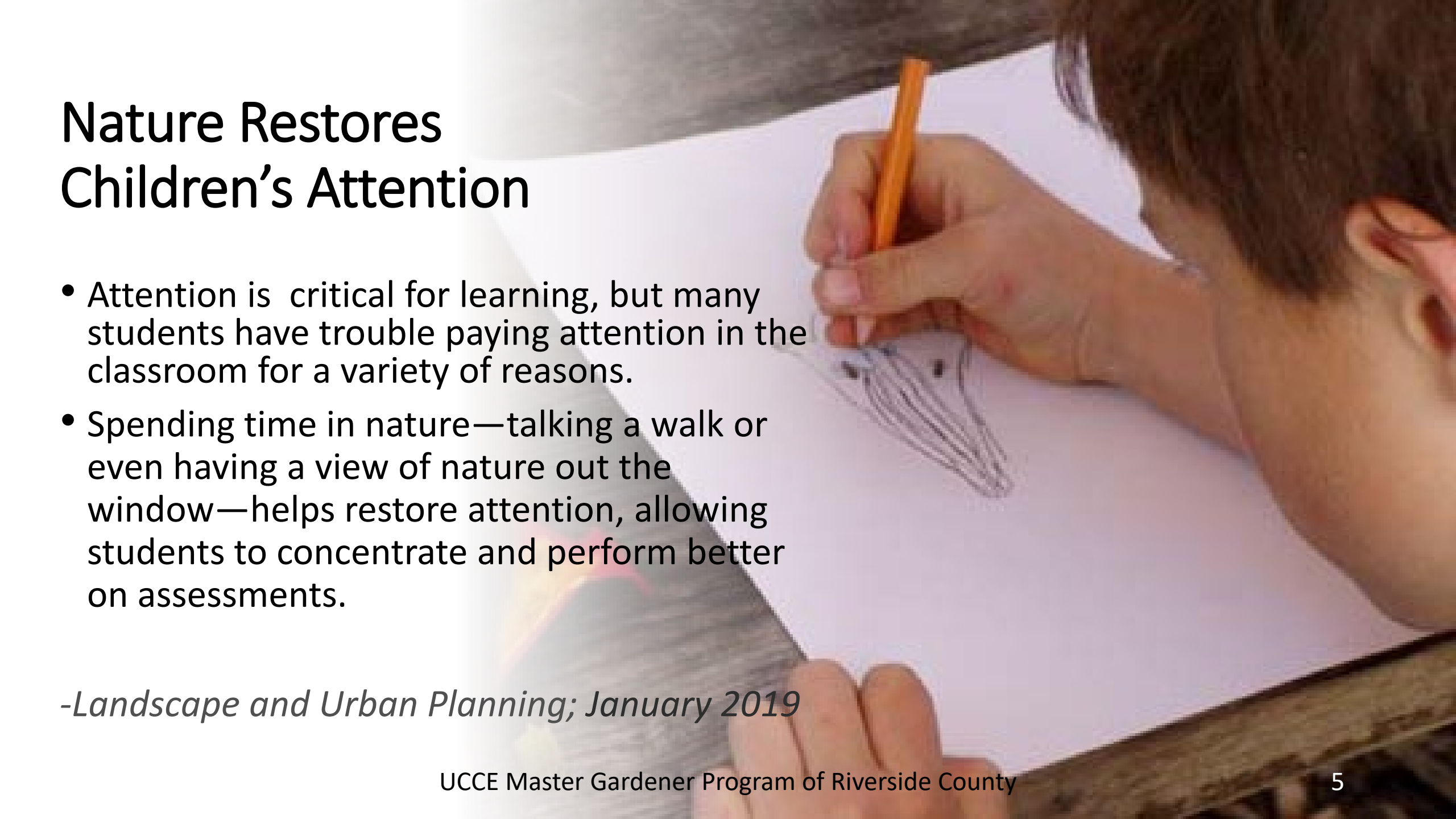
-Ming Kuo, Ph.D ; Landscape and Human Health Laboratory at the University of Illinois

Outdoor Instruction Makes Students More Engaged and Interested

- Research suggests that students are more engaged in learning not only during outdoor classes but also upon returning to their classroom afterward—even if the subject they return to is not nature-related.

-Frontiers in Psychology, January 2018

Nature Restores Children's Attention



- Attention is critical for learning, but many students have trouble paying attention in the classroom for a variety of reasons.
- Spending time in nature—talking a walk or even having a view of nature out the window—helps restore attention, allowing students to concentrate and perform better on assessments.

-Landscape and Urban Planning; January 2019

Outdoor Learning Can Help Build Resilience

- Studies have found that holding a class outdoors can significantly improve the daily cortisol patterns of students—reflecting less stress and better adaptation to stress—resiliency-when compared to kids with indoor-only instruction

-6 Ways Nature Helps Kids Learn; 2019

School Gardens Address a Range of Curriculum Areas

- The bar graph was developed from data based on a 2014 California School Garden Survey of educators conducted by Life Lab in conjunction with the California School Garden Network.
- 552 schools responded to the survey. 86% of the respondents had school garden programs, while 14% did not have school gardens.
- Most respondents were K-5 teachers.

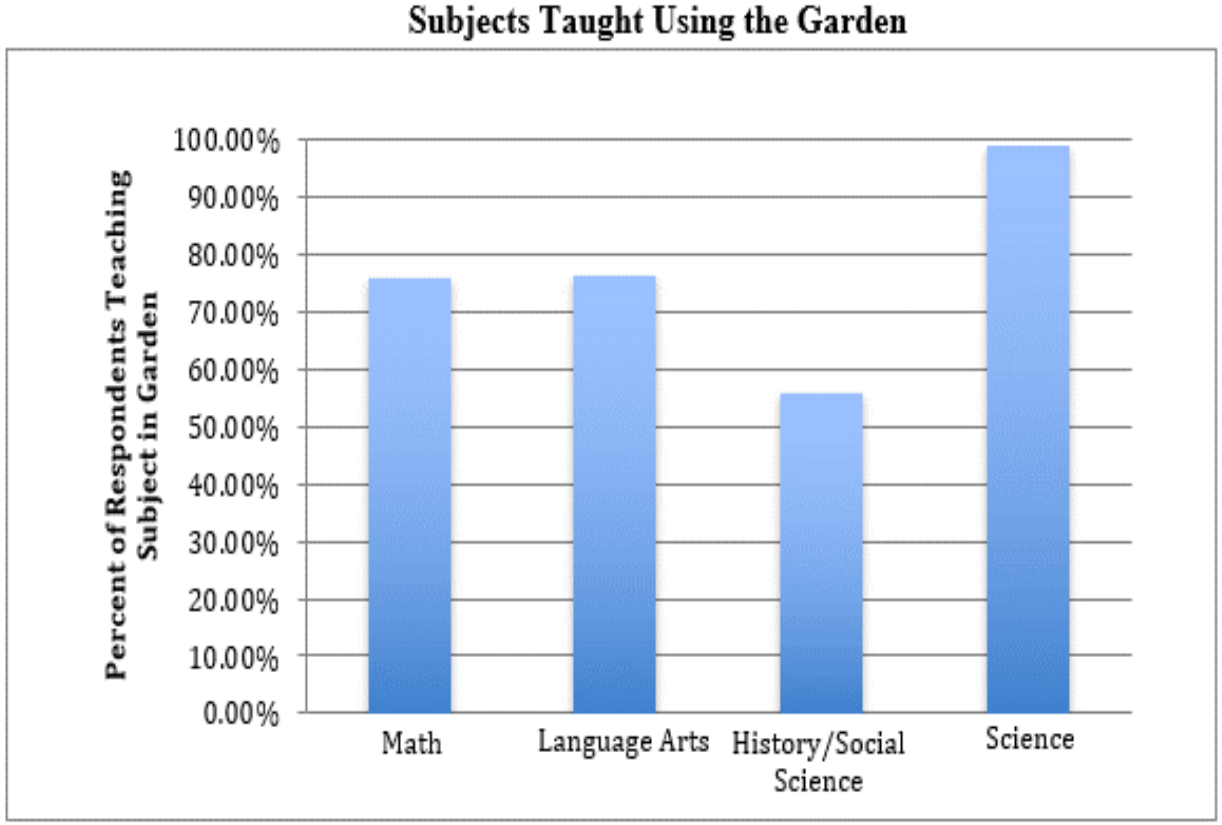


Figure 3: Survey respondents were asked to signify if their gardens were used to teach each of the following: Math, English/Language Arts, History/Social Science and Science.

Direct Academic Outcomes

- A synthesis of research results showed a preponderance of positive impacts on direct academic outcomes.
- The highest positive impact was in science followed by mathematics and language arts.

-*Impact of Garden-Based Learning on Academic Outcomes in Schools: Synthesis of Research Between 1990 and 2010*

Benefits of Linking Science Curriculum to Gardens

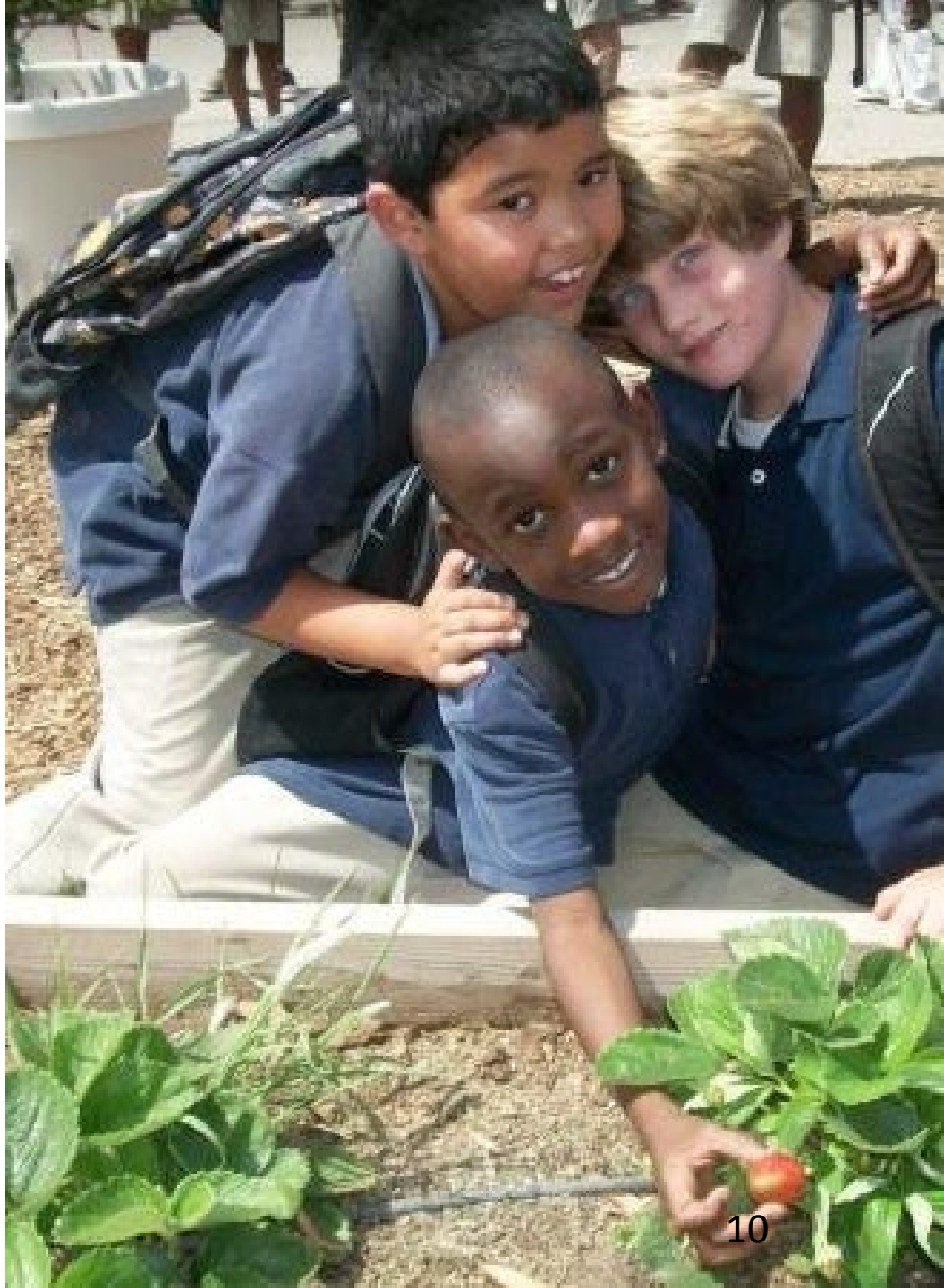
- School gardens give students the opportunity to experience different ways of learning science that are engaging and motivating.
- Such learning experiences may, in turn, promote students' sense of science identity and science achievement.

--*International Journal of STEM Education; March 2018*

Indirect Outcomes

- Indirect academic outcomes were also measured with social development surfacing most frequently and positively.
- These results were consistent across programs, student samples, and school types and within the disparate research methodologies used.

-Impact of Garden-Based Learning on Academic Outcomes in Schools: Synthesis of Research Between 1990 and 2010



California Department of Education Guidance Addresses the Research

Utilize School Facilities as a Learning Tool

Outdoor learning should be integrated into academic subjects and used for more than a stand-alone option.

- Outdoor learning increases academic learning and environmental literacy.
- Exposure to nature has social, emotional and physical benefits for students.

Incorporate nature into the built structure to foster student well-being.

- Student learning is enhanced by even distribution of daylight and expansive outdoor views.
- Uncover windows.
- Add planters and mobile gardens to the classroom.

-CDE Office of Learning Environments

U.S. Department of Education Recognition for Integrating Student Gardens Into Academic Instruction

2021 California Green Ribbon Selectees

May Ranch Elementary School, *Val Verde USD*

Theodore Roosevelt Elementary, *Desert Sands USD*

Fryberger Elementary School, *Westminster USD*

Los Altos High School, *Mt. View Los Altos Union HSD*

Resources

- California Department of Education; 2021 National Green Ribbon Recipients
- California Department of Education Office of Learning Environments; April 28, 2021; Tweet
- California School and Youth Gardens Network (CSGYN); workshop resources
- *Do Lessons in Nature Boost Subsequent Classroom Engagement? Refueling Students in Flight;* Ming Kuo, Matthew H. E. M. Browning, Milbert L. Penne; Frontiers in Psychology, January 2018
- *How is environmental greenness related to students' academic performance in English and Mathematics?* Landscape and Urban Planning; Volume 181, January 2019
- *Impact of Garden-Based Learning on Academic Outcomes in Schools: Synthesis of Research Between 1990 and 2010*; June 1, 2013; Review of Educational Research; Dilafruz R. Williams, P. Scott Dixon; Sage Journals

Resources Continued

- *Outdoor learning and greentime: How kids benefit from learning and playing in nature*; 2018-19 Gwen Dewar, PhD; Parenting Science
- School Garden Resources; Enhance Academic Resources; University of Georgia, Extension
- *Science in the Learning Gardens: a study of students' motivation, achievement, and science identity in low-income middle schools;* Dilafruz R. Williams, Heather Brule, Sybil S. Kelley & Ellen A. Skinner*;* International Journal of STEM Education; March 26, 2018
- *Six Ways Nature Helps Children Learn*; Ming Kuo; Greater Good Science Center e-publication; UC Berkley; June 7, 2019
- 2014 California School Garden Survey; Life Lab
- *The Psychology of the Garden: How Gardening Can Make You Healthier and Happier*; Janet Hartin, Environmental Horticulturist, UCANR PowerPoint
- **Images:** CDE; CSGYN, Hartin, May Ranch Elementary School, Next Generation Science Standards; US Department of Agriculture

California Standards For the Teaching Profession

Standard 1: Engaging and Supporting All Students in Learning

- 1.3 Connecting subject matter to meaningful, real-life context

Standard 2: Creating and Maintaining Effective Environments for Student Learning

- 2.2 Creating physical or virtual learning environments that promote student learning, reflect diversity, and encourage constructive and productive interactions among students

Standard 3: Understanding and Organizing Subject Matter for Student Learning

- 3.4 Utilizing instructional strategies that are appropriate to the subject matter
- 3.5 Using and adapting resources, technologies, and standards-aligned instructional materials, to make subject matter accessible to all students

Master Gardeners

The University of California Cooperative Extension (UCCE) Master Gardener Program (MGP) is an educational program designed to teach and effectively extend information to address home gardening and non-commercial horticulture needs in California.

UCCE is the outreach arm of UC's division of Agriculture and Natural Resources (ANR). Master Gardener volunteers (MG volunteers) promote the application of basic environmentally appropriate horticultural practices through UCCE-organized educational programs that transfer research-based knowledge and information.

University of California
Agriculture and Natural Resources
UCCE Master Gardener Program

Gardening Questions?

Email the UCCE Master Gardeners of Riverside County

- Email Helpline: anrmgriverside@ucanr.edu
- School Gardens: mgschoolgardens@gmail.com

Website Resources

- Riverside Master Gardeners Website

University of California
Agriculture and Natural Resources
UCCE Master Gardener Program