Connecting Educators to Grow Climate Change Education Programs

2026 Climate Toolkit Symposium
Duke Farms, Oct. 28-30

Bruce Gatling-Austin
Educational Coordinator
Botanical Garden of the Piedmont

Katherine Golden
Senior Manager, Sustainability Initiatives
Missouri Botanical Garden

Maggie McCoy
Climate Change Education Coordinator
Missouri Botanical Garden



Learning Objectives

1. **Gain inspiration and insight**
2. **Discuss avenues for peer support**
3. **Access resources and learn from other gardens**







Presentation Outline

1 What is PLACCE?

Plants and Climate Change Education

2 Head, Heart, and Hands

Botanical Garden of the Piedmont

3 Unfolding Nature's Calendar

Missouri Botanical Garden

4 Discussion & Q&A

Instructions

Go to

www.menti.com

Enter the code

6482 5260



Or use QR code

What is PLACCE?

Plants and Climate Change Education Peer Learning Cohort



MISSOURI BOTANICAL GARDEN | Botanical Garden of the Piedmont | PHIPPS | Duke Farms

Plants and Climate Change Education (PLACCE)

A peer learning group of public garden education professionals exploring plant-centered climate change education in public gardens through:

- Professional learning
- Crafting and testing models
- Sharing

Convened by:

American Public Gardens Association

United States Botanic Garden

Cohort Members



2022-24 Cohort

- Hoyt Arboretum
- Lyon Arboretum
- Naples Botanical Garden
- Reiman Gardens
- UC Davis Arboretum and Public Garden
- U.S. Botanic Garden

2024-26 Cohort

- Botanical Garden of the Piedmont
- Gardens of Golden Gate Park
- Missouri Botanical Garden
- National Tropical Botanical Garden at the Kampong
- Trees Atlanta
- U.S. Botanic Garden

2022-24 Cohort Members

- **Hoyt Arboretum**
  Tree Health in a Changing Climate: Connecting 7th Graders to the Western Redcedar

- **Lyon Arboretum**
  E ola nā mea ulu o Hawai'i: Thrive the Growing Things of Hawai'i

- **Naples Botanical Garden**
  The D.R.A.G.O.N. (Dedicated Researchers Adventuring for Green Outdoors Now) Squad



2022-24 Cohort Members

- **U.S. Botanic Garden**
  Cocktails & Conversations: Bridging Plant-Focused Climate Change Research and Practice

- **Reiman Gardens**
  Science Communication Fellowship

- **UC Davis Arboretum and Public Garden**
  Climate-Ready Gardening Program



2024-26 Cohort Members

- **Trees Atlanta**
  Project ACER: Atlanta Canopy Education and Research

- **Botanical Garden of the Piedmont**
  Head, Heart, and Hands

- **National Tropical Botanical Garden at the Kampong**
  Resilient Plants



2024-26 Cohort Members

- **U.S. Botanic Garden**
  Engaging Students with Plant Science: Biodiversity and the Plants We Eat

- **Gardens of Golden Gate Park**
  Change Over Time in the Children's Garden: A Hands-on Field Trip Program

- **Missouri Botanical Garden**
  Unfolding Nature's Calendar



Peer Learning Phases

Phase One: Foundations

- Monthly meetings; in-person working session at U.S. Botanic Garden
- Professional learning webinars with APGA Education Community

Phase Two: Planning and Peer Conversations

- Monthly meetings

Phase Three: Implementation and Reflections

- Reconvened every other month to discuss progress, successes, and challenges







Peer Learning Phases

Phase Four: Sharing

- American Public Garden Association Education Symposium
- APGA Climate Change Education Virtual Summit
- Grub ‘n Green & Internal Working Group
- Climate Toolkit Symposium
- Youtube Playlists





Spotlight on Two Models for Education Programming

Head, Heart, and Hands

Botanical Garden of the Piedmont



MISSOURI BOTANICAL GAR | Botanical Garden of the Piedmont | PHIPPS | Duke Farms

Project Goals

Empowering teenagers with knowledge, speaking skills, and meadow gardening experience

- We focused on fifteen years old to provide a sense of agency and power at a stage of life when young people often feel powerless.
- Head: climate change knowledge;
- Heart: learned & practiced public speaking;
- Hands: meadow garden.



Head, Heart, and Hands: Climate Change Knowledge, Speaking, and Planting for Teenagers











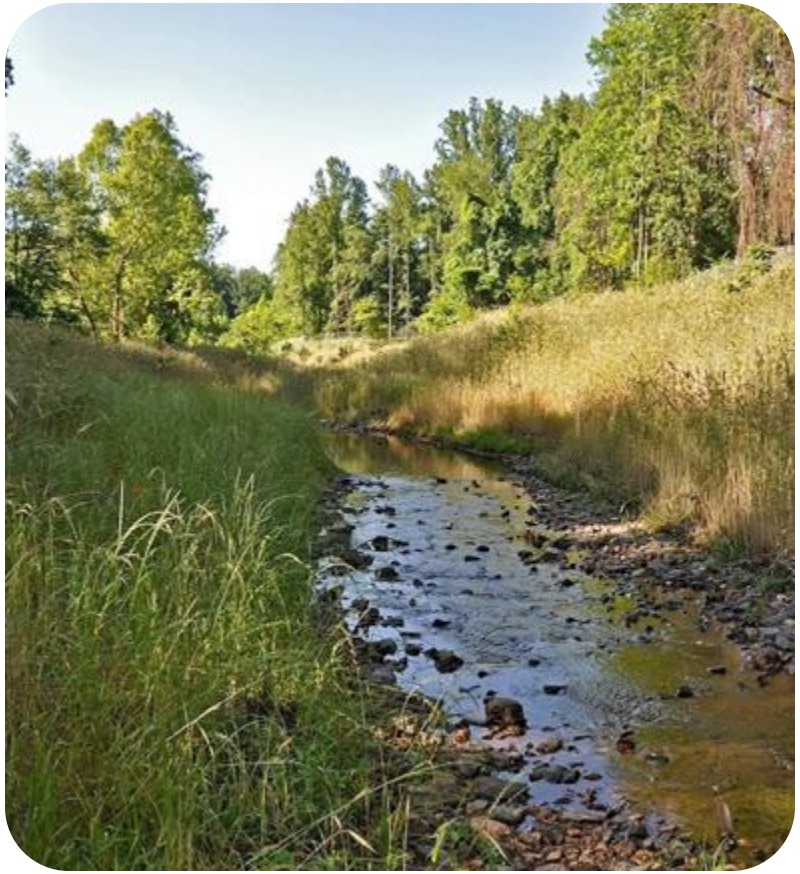


Botanical Garden of the Piedmont

Site Challenges

We are a very young (less than ten years) public garden.

- We have no permanent facilities on site
- Limited internal access to fifteen acre site
- We are unknown to much of the local community
- Fundraising to begin construction



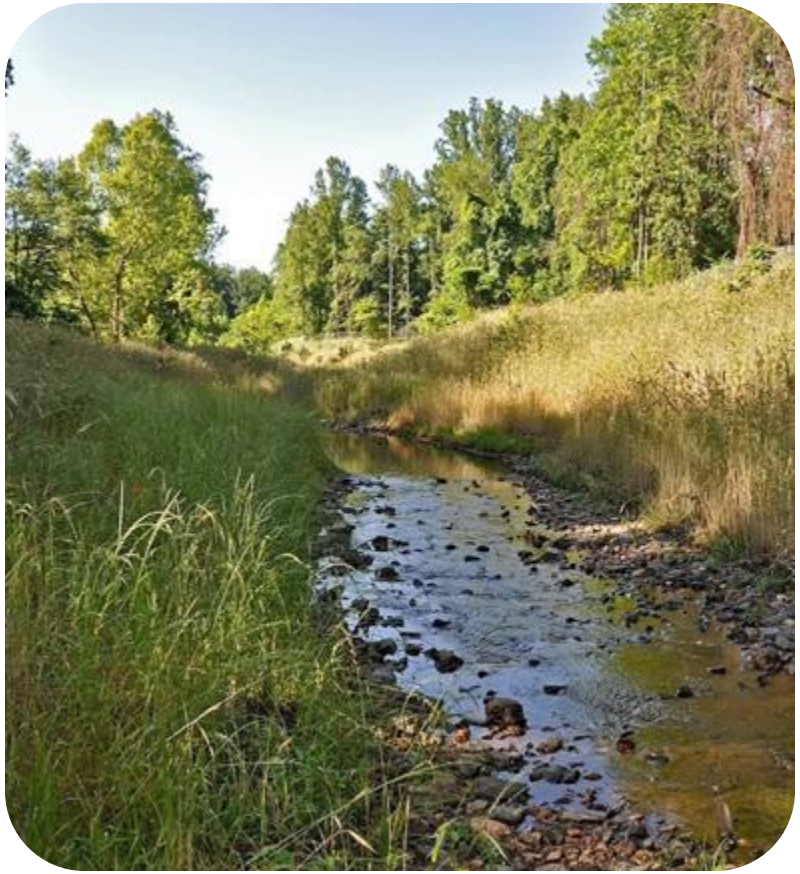




Project Challenges

Because our audience are all minors we contacted them indirectly through schools, administrators, and teachers.

- Classes were on Saturday afternoons.
- We couldn’t enforce a requirement to attend
- Staff turnover during planning
- Students are people too and have unexpected absences.



Project Adaptations

Despite the challenges we were able to make and find beneficial solutions.

- We held makeup classes.
- The replacement staff person had more hours available
- The outdoor meeting places added an enjoyable experience



Unexpected Supporters

- American Climate Partners
- Charlottesville Climate Collaborative
- Cville 100
- University of Virginia Environmental Institute

Key Lessons

Head, Heart, and Hands - Strengths

- **Empowerment for teenagers** on every level especially because we met multiple times throughout the year and students were from different high schools.

- **Self realization for teenage awareness** - students realized there was a lot more to be known and understood about climate change than they assumed coming in.

- **Skill development** - beyond increased knowledge base

Head, Heart, and Hands - Opportunities

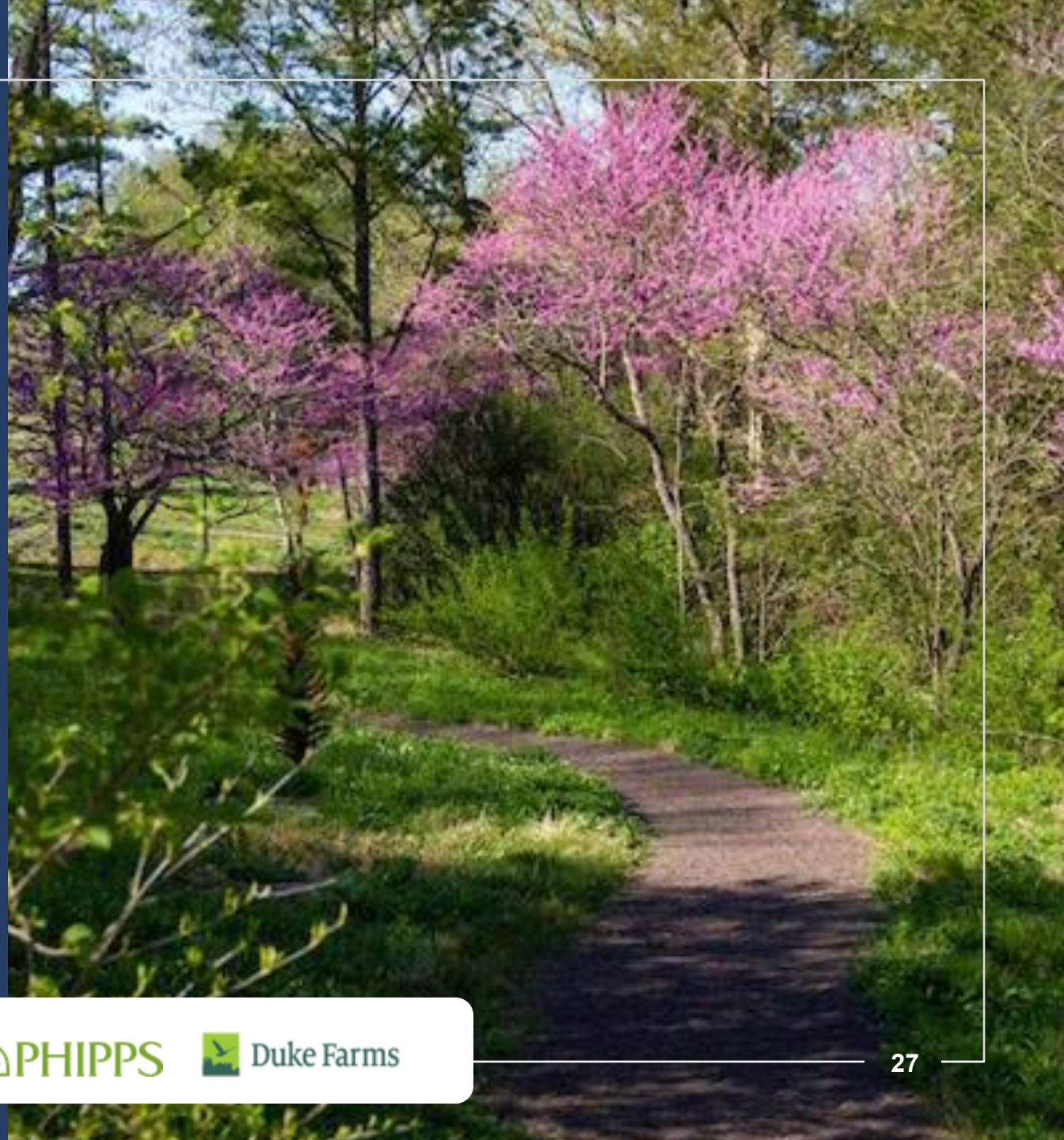
- **Incentivizing** teenagers to attend a weekend class on multiple dates. We could pay students with money, certificates, or recommendation for college application.

- Using supporters and non-profit groups to **advertise** class as well as school systems.

- **Follow up** with students the next school year with a refresher class or opportunities to be support staff for next class.

Unfolding Nature's Calendar

Missouri Botanical Garden



MISSOURI BOTANICAL GAR | Botanical Garden of the Piedmont | PHIPPS | Duke Farms

Project Goals

Develop K-12 educational programming to bridge the gap between Garden education and scientific research.

- Increase regional educator knowledge and understanding of climate change impacts through observable plant-based evidence
- Increase educator use of the Garden's herbarium
- Inspire environmental action



Phases of Development

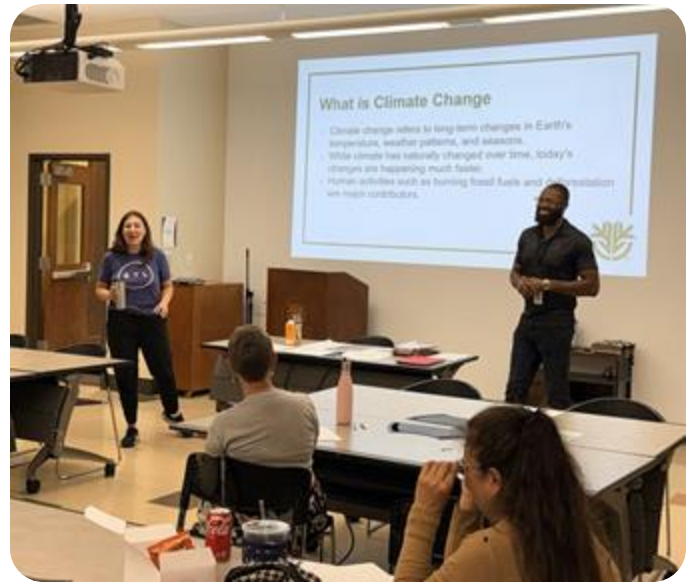
Educator Focus Groups



Lessons & Pilot Phase



Educator Workshop



Focus Groups

1. **Teachers want to teach climate change**
2. **Barriers include competing learning standards, limited instructional time, and uncertainty**
3. **Anchoring phenomena, data, and the scientific process are leverage points**







Phenology Lessons

Based on Shaw Nature Reserve phenology study by Matthew Austin, Assistant Curator of Biodiversity Data

Lesson One - Plant Parts and Phenophases
Lesson Two – Making Observations

Lesson Three – Collecting Historical Data
Lesson Four – Using Data to Tell a Story

Recommended for young grade levels
Recommended for 6-12 only



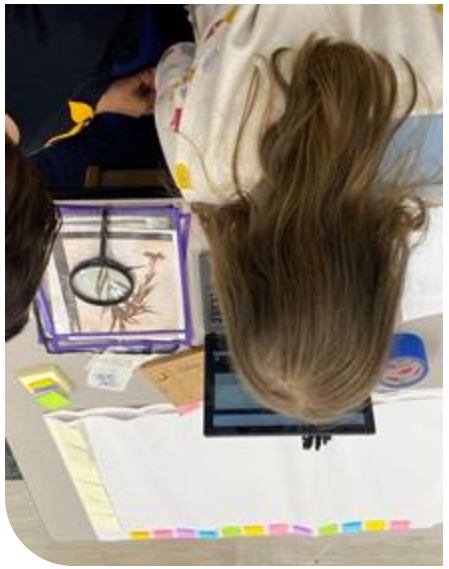
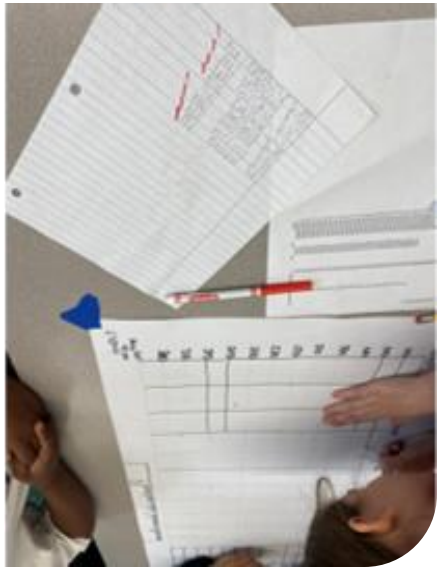
Phenology Lessons

Based on Shaw Nature Reserve phenology study

Essential Questions

- Why and how do plants change during different times of year?
- How can we use plants to observe changes in climate in the Midwest?
- How do changes in the natural world affect people?



Educator Workshop

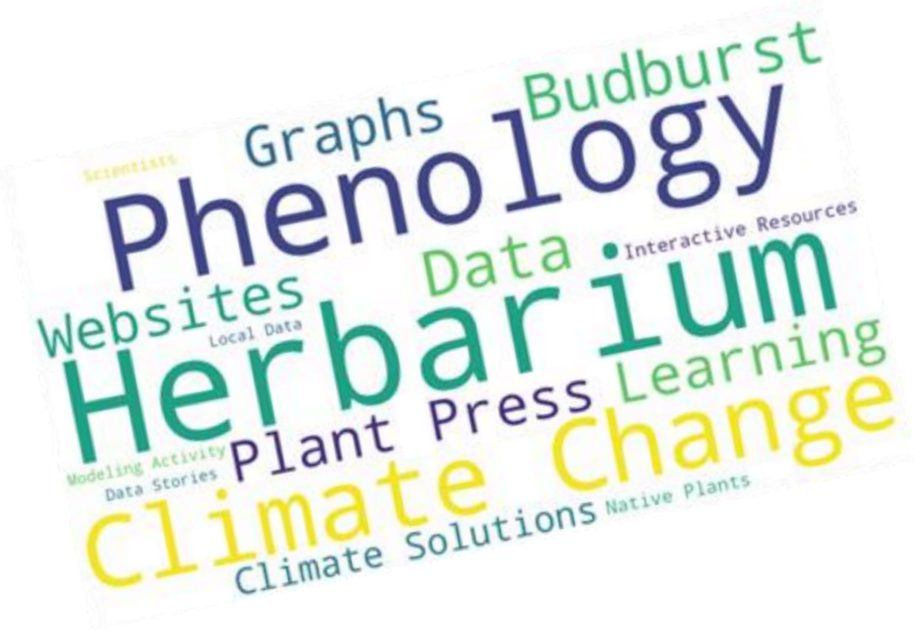
- **85% of the educators said they would likely use the ideas**, resources, and lessons presented during the workshop in their classroom

- Following the workshop, **85% of educators reported a high degree of confidence** in their ability to teach climate change topics

- Evaluations show **gaps in understanding how climate change works** and what is currently being done to address it on a larger, community scale

21 Educators

13 School Districts



Unintended Discoveries

- School and Adult Education Programs
- Herbarium Field Trips
- Youth Volunteer Project
- “So You Want to Talk About Climate”
- ABC Walks at Shaw Nature Reserve
- Missouri Botanical Garden Garden Climate Change Working Group



Key Lessons

Unfolding Nature's Calendar - Strengths

- **Engaging educators on multiple levels** is essential for success.
- **Leverage local, observable phenomena**, scientific process, and data.
- **Collaboration!** Opportunities for educators to connect with one another, Garden staff and scientists enriched this project.
- Projects **inspired by real science** led by Garden staff can, and should, be used to inspire learning about climate change and plants.

Unfolding Nature's Calendar - Opportunities

- Educators need **more basic climate change information** and explanations.
- Future programs should be more i**ntentional about connecting local evidence of climate change** to the larger mechanisms driving it.
- We need to provide more **opportunities to engage and explore collective action** and community-level solutions.

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Educational Coordinator
Botanical Garden of the Piedmont
programs@piedmontgarden.org

Katherine Golden
Senior Manager, Sustainability Initiatives
Missouri Botanical Garden
kgolden@mobot.org

Maggie McCoy
Climate Change Education Coordinator
Missouri Botanical Garden
mmccoy@mobot.org

Professional Learning Webinars

PLACCE Project Videos



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