

**Making
Academic Standards
Engaging**

**Virtual Summer Training
July 18, 2023**

Agenda

- What are standards and where do they come from?
- Common standards used in the kitchen and garden
- What does it mean to meet a standard?
- PRACTICE: Backwards Design

A little history...

- First developed in the late 1800's and early 1900's
- Originally used as tools for objective-based learning
- Came back into style in the 1980's as a way to standardize learning across the country
- More recently tied explicitly to specific pedagogical techniques

Standards are an expression of **values**

Reflect

- How would you describe your relationship to standards?
- What goals or questions do you have for the workshop today?

At **worst**, standards can...

- Limit teachers' capacity to be responsive and relevant
- De-value certain systems of learning and knowledge and perpetuate others in harmful ways
- Become a tool for extracting money from school systems
- Set schools up to lose autonomy
- Prompt shame – in students and teachers

At **best**, standards can...

- Offer a foundation for a more equitable education system
- Act as a “passport” towards future opportunities for students
- Support educators in engaging more critically with what and how they teach

Reflect

- What values feel particularly important for you to integrate into your lesson plan today?

What does it mean to be **standards-aligned**?

Common Core in Edible Education (Top 3)

- **SL.6.1.** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.
- **RI.6.4.** Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.
- **RI.6.7.** Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.

Is it standards-aligned?

- Will **every student** have an opportunity to **engage** in standard-based learning?
- How **integrated** is the standard-based learning with the **primary lesson objectives**?
- How **integrated** is the standards-based learning with **gardening and/or cooking practices**?

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Common Core Alignment = teaching practices!

SL.6.1. Engage effectively in a range of collaborative discussions...on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.

- Walk & Talk in the garden
- Discussion while working in the garden or cooking
- Discussion at the table while eating

NGSS alignment in Edible Education

Every standard has 3 dimensions:

- **Disciplinary Core Idea (DCI)** - what are the main ideas or concepts students are meant to understand?
- **Science & Engineering Practice (SEP)** - what are the main skills or practices students are expected to gain competency in?
- **Cross-Cutting Concept (CCC)** - what connections should students be able to draw between their new learning and big ideas in science?

Can you identify the 3 dimensions?

MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.

- **Disciplinary Core Idea (DCI)** - main ideas or concepts
- **Science & Engineering Practice (SEP)** - skills or practices
- **Cross-Cutting Concept (CCC)** - connections to big ideas

Can you identify the 3 dimensions?

MS-LS2-1. **Analyze and interpret data** to provide evidence for the **effects of resource availability on organisms and populations of organisms** in an ecosystem.

- **Disciplinary Core Idea (DCI)** - main ideas or concepts
- **Science & Engineering Practice (SEP)** - skills or practices
- **Cross-Cutting Concept (CCC)** - connections to prior knowledge

1. Choose a standard

Choose one from the list of common standards in Edible Education.

2. Break it down

- What should students be able to *do* once they have mastered the standard?
- What are the *key themes or concepts* that students should understand?
- Which *cross-cutting concept* lends itself most naturally to this standard?

3. Connect it to cooking or gardening

Example: Farming practices that affect resource availability

- **Crops**

- Nutrients—*fertilizer, compost, cover cropping, soil amendment*
- Water—*irrigation practices, soil health management*
- Sunlight—*garden design, bed layout*

- **Pollinators & Beneficial Insects**

- *Intercropping, planting flowering perennials, allowing crops to go to seed etc.*

- **Microbes**

- *Composting techniques, Till vs. No-till*

4. Design an activity

Design a **cooking/gardening activity** that allows students to engage in the **practice** outlined in the standard, and by doing so, apply or build mastery of the **key themes/concepts**.

Discussion & Questions

Main Takeaways

To develop a standards-based lesson...

- Make sure you understand the standard
- Brainstorm cooking and gardening activities that relate
- Design student engagement so that they practice the core competencies in the standard *through* engaging in cooking or gardening activities.

Helpful hints

- There's no need to cover an entire standard in one lesson! Less is often more.
- Start by developing a standards-based activity, then build the rest of the lesson to support student engagement
- See what happens if you ask “Why?”, and work backwards
 - Why do we cook/grow food that way?

REFLECT

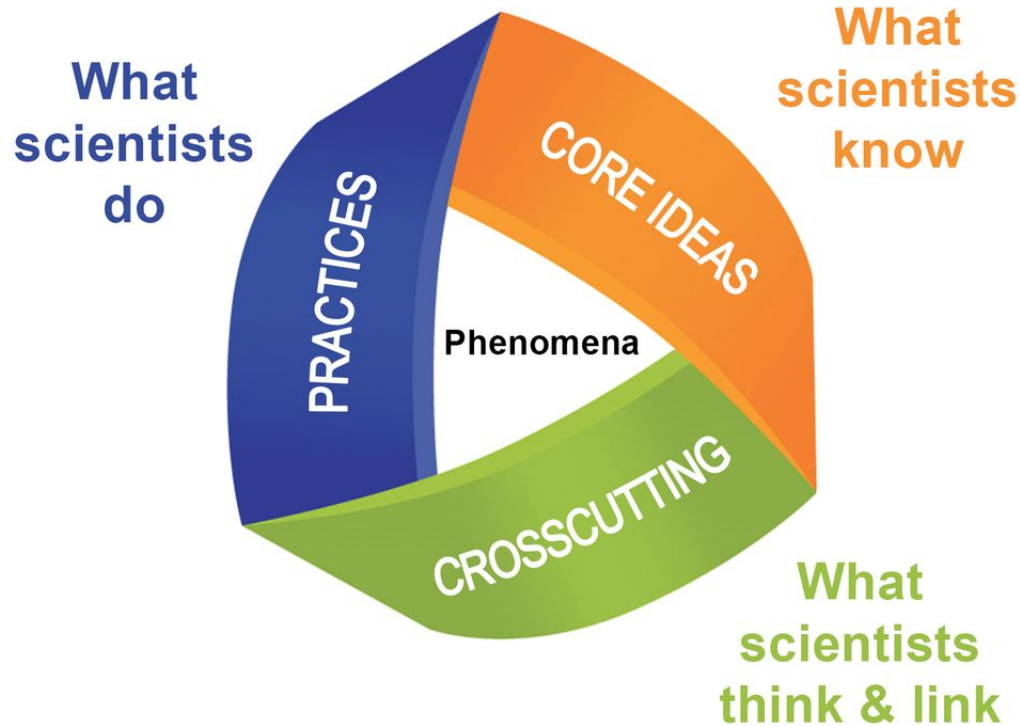
- What questions do you have?
- What feels exciting or interesting to you?
- What feels challenging or uninspiring?
- Has your perspective on academic standards changed at all today?
- What intentions do you have for your own teaching going forward?

Be in touch!

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NGSS in the Kitchen and Garden

THREE DIMENSIONS OF THE FRAMEWORK



Central Question: How do we create engaging, hands-on, NGSS-aligned lessons in the Kitchen and Garden?

- **Challenge:** *Gardening or cooking = “add-ons” or “afterthoughts”.*
- **Goal:** *Gardening and cooking at the center of 3D learning.*

What is 3D learning?

- Lesson includes 3 dimensions (DCI, SEP, CCC)
- 3 dimensions are *integrated*

Example 1: Students build three different compost piles with different proportions of brown and green ingredients. They record their observations (temperature, appearance etc.) over time, and then construct arguments for the optimal ratio of brown to green ingredients for decomposition to occur.

What is 3D learning?

- Lesson includes 3 dimensions (DCI, SEP, CCC)
- 3 dimensions are *integrated*

Example 2: Students apply what they know about the properties of different states of matter (gas, liquid, solid) to design and test recipes for soup dumplings. They justify their proposed recipes with scientific evidence, and explain their results in terms of properties of matter.

Start by asking “WHY?”

- *Why do we cook food that way?*
- *Why do we grow food that way?*

Example #2: in the kitchen

- What cooking practices do you have questions about?
 - Why add oil to the pan before adding food?
 - Why bloom spices in oil?
 - Why cook souffles in water baths?
 - Why knead bread?
 - Why add baking soda or powder to baked goods?
 - Why add salt to yeasted dough later than sugar?
 - Why cut vegetables the same size for stir fries and roasting?

Example #2: in the kitchen

- PS3-A. DEFINITIONS OF ENERGY. Temperature is a measure of the average kinetic energy of particles of matter. The relationship between the temperature and the total energy of a system depends on the types, states, and amounts of matter present.
- How do we make decisions about what size and shape to cut vegetables when we're cooking? What scientific factors influence how size and shape impact how an ingredient cooks?