Breakout Room Activity #2

To Do: Work in a small group to design a cooking or gardening-based standards-aligned lesson. To get started, follow the steps below:

1. **Choose a standard** from the list of common standards on pages 2-3.

2. **Break down the standard.**
    a. What should students be able to do once they have mastered the standard?
    b. What are the key themes or concepts that students should understand?
    c. *If you choose an NGSS standard...* Which cross-cutting concept lends itself most naturally to this standard?

3. **Connect it to a cooking or gardening practice.** Start by brainstorming which cooking or gardening practices relate to the standard's main ideas. For example, farming practices that affect resource availability for organisms in the garden include:
    - **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 on the borders of beds, allowing crops to go to seed etc.
    - **Microbes**
        - Composting techniques
        - Till vs. No-till cultivation

4. **Design an activity** that allows students to engage in the practice outlined in the standard, and by doing so, build greater mastery of the key themes and concepts. Challenge yourself to place a cooking or gardening activity at the center. How can students engage in standards-aligned learning *through* hands-on cooking/gardening?

5. **Design a full lesson** that frames and supports the activity. Are there any terms or concepts to introduce up-front? What kind of scaffolding might students need to be able to successfully engage? How can you assess student learning at the end of the lesson? How does this learning tie into other learning from the year so far?

Common Academic Standards in Edible Education

Below are some academic standards that lend themselves particularly well to cooking and gardening-based lessons. This list is not comprehensive, but should be a helpful starting place!

Common Core

- **SL.6.1.** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacherled) 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.

Next Generation Science Standards (NGSS)

Matter and its Interactions

- MS-PS1-2. Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.
- MS-PS1-5. Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.

Energy

- MS-PS3-3. Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.*

From Molecules to Organisms: Structures and Processes

- MS-LS1-5. Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.
- MS-LS1-6. Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.

Ecosystems: Energy, Interactions and Dynamics

- 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.
- MS-LS2-3. Develop a model to describe the cycling of matter and flow of energy among

living and nonliving parts of an ecosystem.

- MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
- MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.*

Biological Evolution: Unity and Diversity

- MS-LS4-4. Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.

Engineering Design

- MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
- MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
- MS-ETS1-3. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.

Science & Engineering Practices	**Cross Cutting Concepts**
• Asking Questions & Defining Problems • Developing & Using Models • Planning & Carrying Out Investigations • Analyzing & Interpreting Data • Using Mathematics & Computational Thinking • Constructing Explanations & Designing Solutions • Engaging in Argument from Evidence • Obtaining, Evaluating & Communicating Information	• Patterns • Cause & Effect • Scale, Proportion & Quantity • Systems & Systems Models • Energy & Matter • Structure & Function • Stability & Change

See more on SEPs: https://ngss.nsta.org/PracticesFull.aspx

See more on CCCs: https://ngss.nsta.org/CrosscuttingConceptsFull.aspx