

NGSS Unit Planning with UbD

Teacher Name: 2nd Grade Team

Date: 1-2-16

School Site: E. Hale Curran

Unit: Creating a Garden- Plant Study (Lesson 3)

NGSS Covered:

• PHYSICAL SCIENCE

Matter and its Interactions - Students who demonstrate understanding can:

Science and Engineering Practices

Planning and Carrying Out Investigations - Planning and carrying out investigations to answer questions or test solutions to problems in K - 2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.

(2-PS1.SEP.1.1.) Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question. (2-PS1-1)

Crosscutting Concepts

Cause and Effect

2-PS1.CC.2.2.) Simple tests can be designed to gather evidence to support or refute student ideas about causes. (2-PS1-2)

Structure and Function

(2-LS2.CC.2.1.) The shape and stability of structures of natural and designed objects are related to their function(s). (2-LS2-2)

• LIFE SCIENCE

Ecosystems: Interactions, Energy, and Dynamics - Students who demonstrate understanding can:

(2-LS2-1.) Plan and conduct an investigation to determine if plants need sunlight and water to grow.

(2-LS2-2.) Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.

Disciplinary Core Ideas

(LS2.A:) Interdependent Relationships in Ecosystems

(LS2.A:1.) Plants depend on water and light to grow. (2-LS2-1)

(LS2.A:2.) Plants depend on animals for pollination or to move their seeds around. (2-LS2-2)

Biodiversity and Humans

(LS4.D:1.) There are many different kinds of living things in any area, and they exist in different places on land and in water. (2-LS4-1)

Biological Evolution: Unity and Diversity - Students who demonstrate understanding can:

(2-LS4-1.) Make observations of plants and animals to compare the diversity of life in different habitats[Clarification Statement: Emphasis is on the diversity of living things in each of a variety of different habitats.] [Assessment Boundary: Assessment does not include specific animal and plant names in specific habitats.]

CCSS ELA Covered:

Writing:

(W2.2) Text Types and Purposes: Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section

(W2.7) Research to Build and Present knowledge: Participate In shared research and writing projects (e.g. read a number of books on a single topic to produce a report, record science observations)

Speaking and Listening:

(SL. 2.1) Comprehension and Collaboration: Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.

- a. Follow agreed-upon rules for discussions (e.g. gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion)
- b. Build on others' talk in conversations by linking their comments to the remarks of others.
- c. Ask for clarification and further explanation as needed about the topics and texts under discussion.

(SL.2.3) Comprehension and Collaboration: Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue

(SL 2.4) Presentations of Knowledge and Ideas: Tell a story or recount an experience with appropriate facts and relevant details, speaking audibly in coherent sentences.

- a. Plan and deliver a narrative presentation that recounts a well-elaborated event, includes details, reflects a logical sequence, and provides a conclusion.

CCSS Mathematics Covered:

- Mathematical Practices

(MP.1.) Make sense of problems and persevere in solving them.

(MP.6.) Attend to precision.

- Measurement and Data

Measure and estimate lengths in standard units.

(2.MD.1.) Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

(2.MD.2.) Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.

(2.MD.3.) Estimate lengths using units of inches, feet, centimeters, and meters.

(2.MD.4.) Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

Relate addition and subtraction to length.

(2.MD.5.) Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.

Represent and interpret data.

(2.MD.9.) Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.

(2.MD.10) Draw a picture graph or bar graph (with single unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

Note: This lesson (modular) will take place over 4 to 6 weeks. Other lessons can be done during this time as teams keep track of plant growth.

Understanding by Design NGSS Unit Plan

Stage 1: Desired Results

Understand

Students will understand that there are a variety of factors that effect growing various types of vegetable plants. They will learn about the many variables that may increase or decrease the plant's chance of growth.

Essential Question(s)

1. What are some of the variables that could inhibit the growth of your vegetable plant?
2. Why is it important to know what those variables are?

Stage 2: Evidence/Assess

Know

Do

Students will know how and why plants grow and how the conditions affect that growth.

Suggested Vocabulary:

variable, inhibit, climate, conditions, stability

Students will grow a vegetable plant in the classroom. They will do this in teams of 4 or 5. Each team will decide on a vegetable plant to grow. Students will need to think about and answer the following questions:

- How much light does my plant need to grow?
- How much water does my plant need to grow?
- What kind of soil will be best for my plant grow?
- How does the climate where you live affect the plants?
- What else should you think about to help your plant grow?

This will take research and investigation.

Once teams have decided on a vegetable and a good place for it, they will plant their vegetable. They will keep track of how much water or plant food to give it, how many days it took to grow through the soil, how much it grows each week, etc. They will need to keep track of this data in their notebooks and also on a classroom chart that teams will create.

Stage 3: Learning Plan

How:

Engage: (1-2 days) Start with the video, Models. Go over vocabulary terms listed above. Put teams together (4 to 5). Have teams discuss the essential questions and write down their responses in their notebooks. This will be revised later. Have teams review

their notes, posters, and data from the first lesson on growing a plant. Using their prior knowledge and notes, have teams answer the following questions:

1. What happened to the plant when it did not get sunlight?
2. What happened to the plant when it did not get water?
3. What happened to the plant when it got both water and sunlight?
4. What can you surmise about what a plant needs to grow?

Have teams create a chart documenting these questions and answers.

Explore: (2-4 days) Teams will now discuss and decide on a vegetable plant to grow. They will need to do research to help them decide. They will need to write the following questions down in their notebooks and use these as their guide to make their decision on a vegetable.

1. How much light does my plant need to grow?
2. How much water does my plant need to grow?
3. What kind of soil will be best for my plant to grow?
4. How does the climate where I live affect the plants?
5. What else should we think about to help our plant grow?

Once teams have decided they can then figure out what they need in order to plant their vegetable (container, soil, location, etc.) and then they can plant.

Explain: (3-5 weeks) Document growth of vegetable plant in notebook. Each team will create a classroom chart/graph to be displayed with ongoing documentation. This way each team can watch the other teams' growth. This can lead to great classroom discussions and debates on the types of vegetables other teams have chosen and why.

Elaborate: (ongoing) Daily or weekly team meetings can be held to discuss plant growth, if revisions or troubleshooting needs to happen. This can also be opened to whole class discussions in order to offer help to other teams. Each team can discuss their rationale for picking their vegetable and what variables have either hindered or helped the growth. Growth can be looked at in regards to stability and change. Each team can discuss the other teams plant growth in comparison to theirs and come up with questions to ask each team based on their plant growth. This can then lead to a writing activity. Each team can then come up with an informative piece of writing that talks about their plant and how one should care for that plant for optimum growth. This writing should include their research about their plant and the variables that went into their decision as well as how their plant is growing and any revisions or realizations they made.

Evaluate: (1-2 days) Do a Stay or Stray activity: At the completion of this module, give each team a location in the classroom. Each team will have their vegetable plant, their chart, and their writing. One member of the team will "stay" while the other members "stray". The one who stays will be the spokesperson (expert) for the group. When members of the other teams come to look at each team's vegetable plant the one who stays will be the one to discuss the teams plant, chart, and writing. The members of the other

teams can ask their questions, give feedback, or make comments. Give about 8-10 minutes for each team rotation. When done have each team meet back and allow the spokesperson to report on what was said. Give teams a chance to reflect on that discussion. Whole class discussions can follow. Teams can then meet back together and relook at the essential questions. Give them an opportunity to discuss their previous answers and what would they now change.

Stage 4: Transfer

Knowledge Transfer:

Crosscutting Concepts: Stability and Change, Cause and Effect

The concept of stability and change as well as cause and effect can be examined throughout this unit. Pose the question to students about how the growth of their vegetable plant can be compared to other things in nature and what variables affect that stability and change. What things man-made can be subjected to stability and change? Cause and effect should be pointed out in all subjects.