

# Classroom Garden

Sonya Gabbard<sup>1</sup>

<sup>1</sup>Affiliation not available

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## 1 Lesson Objectives:

Construct food growing systems in our school to provide a source of fresh vegetables for our students and community.

## 2 Materials:

Markers

Chart Paper

Non-fiction articles on hydroponics

Non-fiction articles on indoor growing systems

Wool cubes

Seeds

1 in. PVC Pipe

Heat Gun

Five-gallon bucket

Plastic tubing

Fountain pump

## 3 Standards:

6.LS.1 Investigate and describe how homeostasis is maintained as living things seek out their basic needs of food, water, shelter, space, and air.

6.LS.2 Describe the role of photosynthesis in the flow of energy in food chains, energy pyramids, and food webs. Create diagrams to show how the energy in animals' food used for bodily processes was once energy from the sun.

6.LS.3 Describe specific relationships (predator/prey, consumer/producer, parasite/host) and symbiotic relationships between organisms. Construct an explanation that predicts why patterns of interactions develop between organisms in an ecosystem.

6.LS.4 Investigate and use data to explain how changes in biotic and abiotic components in a given habitat can be beneficial or detrimental to native plants and animals.

6-8.E.1 Identify the criteria and constraints of a design 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.

6-8. E.2 Evaluate competing design solutions using a systematic process to identify how well they meet the criteria and constraints of the problem.

6-8.E.3 Analyze data from investigations 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.

6-8.E.4 Develop a prototype to generate data for repeated investigations and modify a proposed object, tool, or process such that an optimal design can be achieved.

6-8.LST.1.1 Read and comprehend science and technical texts within a range of complexity appropriate for grades 6-8 independently and proficiently.

6-8.LST.2.1 Cite specific textual evidence to support analysis of science and technical texts.

6-8.LST.2.2 Determine the central ideas or conclusions of a text; provide an accurate, objective summary of the text.

6-8. LST.2.3 Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

6-8.LST 3.3 Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.

6-8 LST 4.1 Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually.

6-8 LST.6.2 Use technology to produce and publish writing and present the relationships between information and ideas clearly and efficiently.

6-8.LST.7.1 Conduct short research assignments and tasks to answer a question (including a self-generated question), or test a hypothesis, drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.

6-8.LST.7.2 Gather relevant information from multiple sources, using search terms effectively, annotate sources, assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.

6-8.LST.7.3 Draw evidence from informational texts to support analysis, reflection, and research

6.NS.5 Know commonly used fractions (halves, thirds, fourths, fifths, eighths, and tenths)

6.DS.2 Select, create, and interpret graphical representations of numerical data, including line plots, histograms, and box plots.

6.DS.3 Formative statistical questions; collect and organize the data, display the data with graphical representations.

6.DS.4 Summarize numerical data sets in relation to their context in multiple ways, such as: report the number of observations, describe the nature of the attribute under investigation, including how it was measured and its units of measurement.

## 4 Lesson Plan

### 4.1 Introduction

Students will be given the following question to begin brainstorming ideas. “How can we provide access to fresh vegetables for our students at school and help those in our community?”

- Students will brainstorm ideas in their groups
- Record this information on a piece of chart paper

### 4.2 Steps in Process

Once ideas have been discussed, students will research types of indoor growing systems. They will need to keep the following constraints in mind: classroom space, difficulty, supplies, will the system solve our problem.

In their research, they will find aerogarden and hydroponics systems. Students will vote on which system would be the best at solving our problem.

Once students have decided on the system to use, they will research different models of this system.

- In groups, students will make a sketch of their design.
- List of materials needed.
- Steps in building their system.

Students will be provided with the following materials to use:

- PVC pipe
- Five-gallon bucket
- Plastic hose
- Small fountain pump

Students will build a model of their design. They will test their design to make sure that the system works. They will present their prototype to the class.

Students will vote on the design that best suits our needs. They will then build a larger model of this system to begin our classroom garden. They will use wool pods to plant vegetable seeds and begin maintaining the system.

### 4.3 Assessment

Students’ projects will be scored using a rubric.

[Sample Rubric](#)