**The Garden Ecosystem…**

# The Science behind Grandmother’s Garden!!

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## Description

## We have all seen a garden before! Most of us have worked, or assisted in planting a garden before. Gardens have numerous benefits to society. A garden is a piece of land, usually near a home, where vegetables, shrubs, fruits, flowers, bushes, trees, and grasses can be grown.

## As a man-made landscape, a garden is a planned space, usually outdoors, set aside for the display, cultivation, and enjoyment of plants and other forms of nature. The garden can incorporate both natural and man-made materials. Depending on which part of the world we live in, gardens can be grown throughout the year or just during the warm months of the year. Gardens can also be very exciting outdoor laboratories where all aspects of science seamlessly function to create a beautiful habitat!

## The goal of this lesson is to understand some of the fundamental sciences behind the creation and maintenance of gardens. It is also important to look at the ecosystem dynamics of gardens and the traditional and cultural aspects that most cultures attribute to gardens.

# What are some of the benefits we get from gardens?

What does a 3-sisters garden look like?

What does a medicine wheel garden look like?

## Objectives

Students will be able to:

* Identify the Biotic and Abiotic components of gardens,
* Understand the concept of ecosystem sustainability as it applies to gardens.
* Identify the role of microbes in the functioning of garden ecosystems.
* Learn basic techniques for planning and starting a garden
* Demonstrate the environmental sustainability aspects of gardens

# North Dakota State Standards

9-10.2.6 Design and conduct a guided investigation

9-10.2.7 Maintain clear and accurate records of scientific investigations

9-10.2.8 Analyze data found in tables, charts, and graphs to formulate conclusions

11-12.1.2 Identify structure, organization, and dynamics of components within a system

11-12.8.1 Identify the criteria that scientific explanations must meet to be considered valid

# Next Generation Science Standards

HS-ETS1-1 Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants

HS-ETS1-3 Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible, social, cultural, and environmental impacts.

HS-ETS1-4 Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints or interactions within and between systems relevant to the problems

HS-LS2-7 Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.

RST.11-12.7- Integrate and evaluate multiple sources of information presented in diverse formats and media(e.g., quantitative data, video, multimedia in order to address a question or solve a problem

# Schedule

09:00-09:30 General Organization and Cultural Connection

09:30-10:00 PowerPoint Presentation

10:00-10:30 Activity 1: *Stuff in your garden*

10:30-11:15 Activity 2A: *Soil Organisms*

11:15-12:00 Activity 2B: Soil *Microscopy*

12:00-12:45 Lunch

12:45-01:45 Activity 3: *How to Start Seeds*

01:45-02:30 Activity 4: *Garden Planner*

02:30-02:50 Activity 5: *Edible Garden Soil Mosaic*

02:50-03:00 Wrap-up activity and Reflection questions

# Cultural Connection:

# Terminology to Note:

### Activities