

STEAMS Community Garden Project-Based Lesson Plan (6th-12th)

Objective: The objective of this project is to design and implement a community garden that incorporates elements of science, technology, engineering, arts, math, and social studies. Students will explore various aspects, including plant life cycles, garden planning, technology tools for data analysis, artistic representations of plants, mathematical calculations for garden layout, and the social impact of community gardens.

Purpose: This project provides students with a holistic learning experience, integrating various STEAMS components while addressing real-world issues and fostering community engagement.

Key Components

<p>Science (S): Plant Life Cycles and Ecosystems</p>	<ul style="list-style-type: none"> ❖ Students learn about plant life cycles, the role of different plant species in an ecosystem, and the benefits of community gardens for local ecosystems.
<p>Technology (T): Garden Data Collection and Analysis</p>	<ul style="list-style-type: none"> ❖ Students use technology tools to collect data on soil quality, sunlight exposure, and water usage. ❖ Students analyze the data to make informed decisions about plant selection and garden layout.
<p>Engineering (E): Garden Design and Construction</p>	<ul style="list-style-type: none"> ❖ Students work on designing the layout of the community garden, considering the needs of various plants, accessibility, and aesthetic elements. ❖ Students may create models or use digital tools for virtual garden design.
<p>Arts (A): Botanical Art and Garden Signage</p>	<ul style="list-style-type: none"> ❖ Students integrate arts by having students create botanical art

	<p>representations of the plants in the garden.</p> <ul style="list-style-type: none"> ❖ Students design informative signage for each plant, explaining its significance and benefits.
Math (M): Garden Layout and Measurement	<ul style="list-style-type: none"> ❖ Students apply mathematical concepts to plan the garden layout, ensuring optimal spacing for each plant. ❖ Students use measurements to calculate the area of each planting bed and estimate the amount of soil and resources needed.
Social Studies (SS): Community Impact and Collaboration	<ul style="list-style-type: none"> ❖ Explore the social aspects of community gardens. Students research the history of community gardens, their impact on neighborhoods, and how they bring people together. ❖ Students interview local community members involved in gardening.

Project Phases and Timeline

Week 1-2: Introduction and Planning	<p>Activities:</p> <ul style="list-style-type: none"> ❖ Introduction to the project and its interdisciplinary nature. ❖ Research on different plant species and their requirements. ❖ Initial planning for the garden layout.
Week 3-4: Technology and Science Data Collection	<p>Activities:</p> <ul style="list-style-type: none"> ❖ Introduction to technology tools for data collection. ❖ Students collect data on soil, sunlight, and water conditions in the chosen garden area.
Week 5-6: Engineering Design	<p>Activities:</p>

	<ul style="list-style-type: none"> ❖ Garden design phase where students create layouts considering the data collected. ❖ Use engineering principles to plan pathways, irrigation systems, and any necessary structures.
Week 7-8: Arts Integration	Activities: <ul style="list-style-type: none"> ❖ Create botanical art representations of selected plants. ❖ Design informative signage for each plant using artistic elements.
Week 9-10: Math and Measurement	Activities: <ul style="list-style-type: none"> ❖ Apply math skills to finalize garden layout. ❖ Calculate measurements for planting beds and estimate resource needs.
Week 11-12: Social Studies and Community Impact	Activities: <ul style="list-style-type: none"> ❖ Explore the social history of community gardens. ❖ Interview community members involved in gardening. ❖ Finalize garden design and present the project to the local community.

Assessment Criteria

Science	Understanding of plant life cycles and ecosystem concepts.
Technology	Effective use of technology for data collection and analysis.
Engineering	Creativity and functionality in garden design.
Arts	Quality of botanical art representations.
Math	Accurate mathematical calculations for garden layout.
Social Studies	Understanding of the social impact of community gardens.

Presentation

Group Reflection Activity

Students present their final community garden designs to the school community, local leaders, and potentially involve local media to showcase the interdisciplinary knowledge and skills gained through the project.