# Inquiry Project Design Plan

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| **Teacher/Designer Names: Laila Gaisi** | |
| **Name of Project: Go Green: Planning an Urban Garden** | **Grade Level: 8th** |
| **Est Launch Date: 10/1/2023** | **Est Duration (in weeks): 24** |
| **Disciplines Involved: Math, Science, ELA** | |
| **Problem Statement**: With industrialization, we're losing valuable "green" real estate, which limits our ability to grow our own food. | |

## STAGE 1: DESIRED RESULTS

**Big Idea: Environment, Stability and Change**

**Enduring Understandings:**

- Urban areas tend to lose green space as they become saturated with buildings and businesses.
- Gardens can be grown with limited resources and even in the smallest of spaces.
- Changes in the environment affect the people and animals that live there.
- A single change to an ecosystem can affect all parts of an ecosystem until equilibrium means.

**Essential Question(s):**
(MEANT TO BE SHARED WITH STUDENTS)

- How can we grow our own food when we have a limited/no amount of green space? (i.e- a yard or grassy area)
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- How do living things respond to the changes in their enviornment?
  - How can we respond to our enviornment in order to make it sustaible for all living things?
  - How do organisms respond to changes in their envinment.

**Established Goals (Standards, Performance Indicators, Learning Goals):**
*choose relevant standards to unit/project plan timing and learning goals; do not need to use all disciplines below.
** unpack into SWK and SWBAT under identified standards as this will lead to aligned assessment design

**Science Standards:**
Key Idea 6: Plants and animals depend on each other and their physical environment.

SWK:

**Social Studies Standards:**

**Mathematics Standards:**
NY-8.EE.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.

NY-8.F.4 Construct a function to model a linear relationship between two quantities.

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Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.

NY-8.F.5 Describe qualitatively the functional relationship between two quantities by analyzing a graph. Sketch a graph that exhibits the qualitative features of a function that has been described in a real-world context.

NY-8.G.9 Given the formulas for the volume of cones, cylinders, and spheres, solve mathematical and real-world problems.

SWK:

SWBAT:

**ELA Standards:**

CCSS.ELA-Literacy.SL.8.5
Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest

CCSS. ELA-Literacy.WHST.8 Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source by applying discipline specific criteria used in the social sciences or sciences; and quote or paraphrase the data/accounts and conclusions of others while avoiding plagiarism and following a standard format for citation or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.

SWK:

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SWBAT:

**Technology Standards:**

- **NYS Computer Science and Digital Fluency:**

7-8.IC.7 Explore a range of computer sciencerelated career paths.

7-8.CT.3 Refine and visualize a data set in order to persuade an audience.

- **ISTE:**

**Social Justice Standards:**

- I can recognize and describe unfairness and injustice in many forms including attitudes, speech, behaviors, practices and laws.
- I know that all people (including myself ) have certain advantages and disadvantages in society based on who they are and where they were born.
- I will work with friends, family and community members to make our world fairer for everyone, and we will plan and coordinate our actions in order to achieve our goals.

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| **Other (Art, SEL, etc):** |
| **Links to Standards/Reference Frameworks:**<br>NGSS, NGSS by DCI Nat'l C3 SS Framework, NYS K-8 SS Standards, Common Core, ISTE, Learning for Justice Social Justice Standards, CASEL SEL Framework, NYS CS and Digital Fluency |

| **Students will know (SWK):** | **Students will be able to do (SWBAT):** |
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## STAGE 2: EVIDENCE & ASSESSMENTS:

**Performance Task Narrative:**

Recent qualitative and quantitative research has highlighted the vast benefits of community gardens, including improved health, food sovereignty, personal development, and environmental stewardship (Figure 2). A systematic literature review conducted by Lampert et al. in 2021 found that community gardeners had significantly better physical and mental health than their neighbors who did not participate in gardening activities. A similar study revealed that participants of community gardens are more likely to consume more fruits and vegetables, regardless of geographic location or demographic, making community gardens particularly important in low-income neighborhoods that otherwise lack access to fresh healthy foods. Community gardens offer a low-cost alternative to accessing foods that may otherwise be difficult to purchase due to distance or lack of transportation to markets, high cost of produce in stores, lack of variety of produce in stores, or lack of knowledge around healthy foods. The act of gardening is proven to facilitate interpersonal cohesion within a community, helping people to build relationships and improve social skills. The benefits of community gardens are especially evident in youth who gain skills development and social skills through gardening, improving their academic performance and long-term personal success, according to a 2010 study. Draper and Freedman's "participants viewed the community garden as a way to successfully bring together people of different races and other people who would not normally socialize… [and] found that the multiple social processes (e.g., mutual trust, reciprocity)

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fostered during participation translated into situations outside of the community garden setting, and other studies found that the relationships formed led to a stronger overall sense of community."


(Source: https://agriculture.ny.gov/system/files/documents/2023/02/communitygardenstaskforcereport.pdf )

**Goal:** *Provide a statement of the task. Establish the goal, problem, challenge, or obstacle in the task.*
The goal of this performance task is for students to be able to design a garden that can be used in an urban setting or where access to green spaces are limited (i.e- raised beds or vertical gardens) so that they can grow their own food, no matter their environment. Students will design a sample garden and compete against classmates to have their design chosen to be built at the school.

**Role:** *Define the role of the students in the task. State the job of the students for the task.*
Researchers, Designers, Mathematicians, Urban Planners, Gardeners, Scientists.

**Audience:** *Identify the target audience within the context of the scenario.*
Fellow community members (schoolmates, teachers, and parents).

**Situation:** *Set the context of the scenario. Define the narrative.*
Industrialization and urban planning can often have a negative impact on the ecology of a neighborhood, especially in disadvantaged communities. With more buildings and less natural landscapes, community members are limited in options for growing their own food.

They will then design their sample gardens (within specific size and cost restraints), create a VR version, and present their ideas for the opportunity to have their design chosen to be built at their school.

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**Product(s):** *Clarify what the students will create and why they will create it.*

- VR design of an urban garden
- The winning design will be built on the school grounds.

**Standards (criteria for success):** *Provide students with a clear picture of success. Identify specific standards for success.*

- Briefly overview Yonkers communities and availability of green space for the use of gardens (personal or community). This will also include research on the benefits of growing your own food.
- Research the different types of gardens that can be built in small spaces or spaces with no grass and chose the one you'd like to design. Find specific details on how to build chosen garden. Research the cost of building the type of garden chosen. (Can it be built under **$500?**) Present to teacher for approval.
- Chose the plants to be planted. Research the type of lighting, water, minerals, etc the plants need to thrive. Think about which plants can be planted near each other, which ones cannot?
- Build a model of the garden including all components (i.e- plants used, irrigation, light source, etc.) on paper or other source. Present to teacher for approval.
- Build your model using VR (CoSpaces) with as much detail as possible. Be prepared to have others "walk through" your space. What questions might they have? Are your plans clear enough for someone to walk through and understand what is going on?
- Create a presentation on Canva outlining the details of your garden. It must include at least one slide for each of the following:
  - Design type with general sketch/example
  - How is your gardened designed/set up?
  - What materials will you need to build the garden? (Not including plants)
  - How much will the materials cost? (Must include prices from a local stores that we can actually buy from)
  - What plants will you plant? How many?
  - How much will the plants cost and any maintenance related items?
  - Attach image of your scale model and a VR tour of garden
  - Why did you chose this specific design and/or why do you think your design should be chosen?

**Other Evidence/Assessments:**

## STAGE 3: THE LEARNING PLAN:

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# Learning Activities

(potential layout below. Can be daily, divided by periods, or even using the Engineering Design Process to divide into stages such as Ask, Imagine, Plan, Create, Improve)

**https://www.ted.com/talks/stephen_ritz_a_teacher_growing_green_in_the_south_bronx?language=en&subtitle=en**

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