

Teacher/Designer Names: Sunitha Howard	
Name of Project: Ecologically friendly Courtyard	Grade Level: 9th & 10th
Est Launch Date: October 2023 –November 2023	Est Duration (in weeks):2-3 weeks
Disciplines Involved: Science, Math, ELA	
Problem Statement: Underused space in the courtyard creates organic waste and is not set up to be sustainable. This underused area of the school needs to be revitalized to be ecologically and student friendly.	

STAGE 1: DESIRED RESULTS

Big Idea:Communities/ Environments

<p>Enduring Understandings:</p> <ul style="list-style-type: none"> • Energy cycles in systems and humans can positively contribute to this cycling by composting, practicing environmental stewardship, etc. • There are different kinds of trash/waste. Organic waste can be recycled into another form of energy in an ecosystem. • 3D Models can be used to refine ideas to create a full scale project • Technology can be used to take measurements and come up with out of the box ideas. 	<p>Essential Question(s): (MEANT TO BE SHARED WITH STUDENTS)</p> <ul style="list-style-type: none"> • How can we transform a space in our school to combat climate change? • How does energy cycle through an ecosystem? • How do natural spaces impact or influence they way people feel?
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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:

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

Math:

Standard 7G: Geometry

Solve real-life and **mathematical problems** involving angle measure, area, surface area, and volume

ELA:

Standard 6- **Research** to **build and present** **knowledge**

Technology Standards:

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

9-12.DL.1 Type proficiently on a keyboard.

9-12.DL.2 Communicate and work collaboratively with others using digital tools to support individual learning and contribute to the learning of others.

● **ISTE: 1.4 Innovative Designer**

Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.

1.4a Students know and use a **deliberate design process** for generating ideas, testing theories, creating **innovative artifacts** or solving **authentic** problems.

1.4b Students select and use **digital tools** to plan and manage a design process that considers **design constraints** and **calculated risks**.

1.4d Students exhibit a tolerance for **ambiguity**, **perseverance** and the capacity to work with **open-ended problems**.

Social Justice Standards:

Diversity 6 DI.9-12.6 I interact comfortably and respectfully with all people, whether they are similar to or different from me.

Links to Standards/Reference Frameworks:

[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):

- How to design using Cospaces
- How to evaluate possible solutions
- How to refine a solution to make it more feasible

Students will be able to do (SWBAT):

- Students will use cospaces to design the courtyard
- Students will create a compost bin system/ Recycling system in the courtyard

STAGE 2: EVIDENCE & ASSESSMENTS:

Performance Task Narrative:

Goal: *Provide a statement of the task. Establish the goal, problem, challenge, or obstacle in the task.*

Students will redesign the current courtyard space to make it ecologically and student friendly.

Role: *Define the role of the students in the task. State the job of the students for the task.*

- Researchers
- Botanists
- Engineers
- Conservationists
- Designers

Audience: *Identify the target audience within the context of the scenario.*

The Lincoln High School Community

Situation: *Set the context of the scenario. Define the narrative.*

Underused space in the courtyard creates organic waste and is not set up to be sustainable. Underused spaces in an environment are a missed opportunity to create a positive impact. This underused area of the school needs to be revitalized to be ecologically and student friendly.

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

- Presentations on their research for their specific task
- Cospaces design to “prototype” courtyard garden design
- Canva website to present and document the courtyard redesign to a public audience

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

- Students design ideas are feasible and
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Other Evidence/Assessments:

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)

Week 1

Learning Goals:

Students will familiarize themselves with current courtyard and become stakeholders.

Learning Events:

Students will visit the courtyard, make observations on the flora and fauna found there using the Seek app.

Students will use drones to take pictures of different aspects of the courtyard to use for their research later

Students will take measurements of the space

Formative Assessments:

A report on the living things with pictures from drone footage found in the courtyard along with their correct information/identification

Notes/Resources:

Seek app

Borrow drones

Week 2

Learning Goals:

To map out the courtyard design space using Cospaces

Learning Events:

Students will familiarize themselves with Cospaces and make a design of the courtyard with accurate measurements

Formative Assessments:

Cospace design with accurate measurements

Notes/Resources:

Week 3

Learning Goals:

To familiarize themselves with different options for an ecologically friendly environment

Learning Events:

Students will research different ecologically friendly options

Formative Assessments:

Students will create a report on two ecologically friendly options to incorporate into the courtyard

Notes/Resources: