Inquiry Project Design Plan

Teacher/Designer Names: Anjinette Piccirella	
Name of Project: Attack of the Spotted Lantern Fly	**Grade Level: 8**
Est Launch Date: October 23rd, 2023	**Est Duration (in weeks): 2**
Disciplines Involved: Science, English, Technology, Engineering	
Problem Statement: How does the lantern fly effect the amount of photosynthesis occuring?	

STAGE 1: DESIRED RESULTS

Big Idea: Cause and Effect

Enduring Understandings:

- Photosynthesis is an essential process for all life to exist on Earth
- Organisms can have profound impacts on one another.
- I can have a profound impact within my community.

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

- How have humans impacted other organisms in the environment?
- How have organisms impacted each other in the environment?

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:

MS-LS1-6 From Molecules to Organisms: Structures and Processes
Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.

MS-LS1-7 From Molecules to Organisms: Structures and Processes
Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.

Mathematics Standards:

6.RP.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.

ELA Standards:

Research to Build and Present Knowledge

STANDARD 6: Gather relevant information from multiple sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

Inquiry Project Design Plan

Technology Standards:

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

7-8.DL.1 Type on a keyboard while demonstrating proper keyboarding technique, with increased speed and accuracy.

7-8.DL.2 Communicate and collaborate with others using a variety of digital tools to create and revise a collaborative project.

- **ISTE:**

Standard 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.

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):	**Students will be able to do (SWBAT):**
• Formula for photosynthesis • The life cycle of the lantern fly and which stage is the most destructive to the environment. • Using household supplies to create traps to protect the trees	• Explain how the Spotted Lantern Fly has negatively impacted the environment around Casimir Pulaski. • Create a webpage of information related to the Spotted Lantern Fly. • Design a prototype for a Spotted Lantern Fly trap.

STAGE 2: EVIDENCE & ASSESSMENTS:

Inquiry Project Design Plan

Performance Task Narrative:

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

Students will design and create a prototype of a spotted lantern fly trap.

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

Students will research different design methods for creating lantern fly traps. They will create prototypes of these designs by using household items. Afterwards, the class will create an informational website to the Yonkers Community on how to construct efficent traps to help curb the population of lantern flies.

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

Providing a resource to the Yonkers Community to learn about information regarding the lantern fly and how best to trap them in one location.

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

The spotted lantern fly has quickly become an invasive species across the United States. We have seen a huge increase in the number of lantern flies in and around the Pulaski campus. You will be designing spotted lantern fly traps, testing the effectiveness of the traps and creating a website where you will upload how to create your lantern fly trap for others in the commuity to follow.

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

- Design and create a prototype for spotted lantern fly traps.
- Create a website where students collaborate with each other to compile a easy and cheap "how to" for lantern fly traps which includes information on the lantern fly.

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

- ❏ Traps are easy to build with materials available at home.
- ❏ Traps with the most bugs are the most successful.

Other Evidence/Assessments:

STAGE 3: THE LEARNING PLAN:

Learning Activities

Inquiry Project Design Plan

(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:

- Why do leaves change color in the fall?
- Structure of chloroplasts
- How are the stomata an integral part of homeostasis?
- Understanding the input and output of photosynthesis

Learning Events:

- Chlorophyll experiment
- BrainPop (Photosynthesis)
- Formula for photosynthesis

Formative Assessments:

- Blitz cards
- Discussion
- Conclusions of the chlorophyll experiment.
- Quiz using index cards with input/output

Notes/Resources:

- Chlorophyll experiment
- Photosynthesis PowerPoint

Week 2

Learning Goals:

- The Life Cycle of the Spotted Lantern Fly
- Create a digital resource available to all Yonkers residents
- Build a prototype for a lantern fly trap

Learning Events:

- Webquest on Spotted Lantern Flies
- Create a webpage of information about the Spotted Lantern Fly
- Fly the drone above the school to see how much of the area is covered in trees
- Research and create a prototype of a trap using household materials
- Test the traps created to see which was the most successful
- Create a “how-to” guide to create the trap on the webpage.

Formative Assessments:

- Blitz cards
- Discussion
- Prototype design
- Webpage creation

Notes/Resources:

- Drones need to be requested.
- Canva