Inquiry Project Design Plan

Teacher/Designer Names: Jennifer Vizcaino **School: MLKA**	
Name of Project: Young Minds Helping Improve our Environment	**Grade Level: 4**
Est Launch Date: October 2023	**Est Duration (in weeks):** 4-5
Disciplines Involved: Science, Social Studies, ELA	
Problem Statement: Climate change/excessive weathering has led to soil instability and erosion around our school and in our neighborhood.	

STAGE 1: DESIRED RESULTS

Big Idea: Innovation

Enduring Understandings:

- Ideas can be generated from what is around us
- We are all responsible for our environment (interdependence)
- Human choices impact the enviroment in which we live
- We can test, revise and improve on our ideas
- Young people have valid ideas that can have positive impacts on society

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

- How can past innovation impact our approach to a current environmental problem in society?

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 (list if using, unpack under each standard into SWK and SWBAT)**:**

3-5-ETS1-1 Define a simple design problem that includes specified criteria and constraints.
3-5-ETS1-2 Generate and compare multiple possible solutions to a problem.
3-5-ETS1-3 Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

SWK:

- Engineering vocabulary
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SWBAT:

- define a design problem and identify the constraints and criteria for a design solution
- research and design possible solutions to a problemv
- investigate how well the solution performs

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Social Studies Standards (list if using, unpack under each standard into SWK and SWBAT)**:**

4.6e Entrepreneurs and inventors associated with New York State have made important contributions to business and technology.
4.1a Physical and thematic maps can be used to explore New York State's diverse geography.

SWK:

- people who made important contributions to technology, and New York State communities
- the location of their community in relation to the state of New York

SWBAT:

- Connect individuals to their technology and describe the impact made with this innnovation
- examine the location of the capital of New York State and the major cities of New York State in relation to their home community, using directionality, and latitude and longitude coordinates

ELA Standards (list if using, unpack under each standard into SWK and SWBAT)**:**

4R3 In informational texts, explain events, procedures, ideas, or concepts, including what happened and why, based on specific evidence from the text. (RI)
4R5 In informational texts, identify the overall structure using terms such as sequence, comparison, cause/effect, and problem/solution. (RI)
4W2 Write informative/explanatory texts to explore a topic and convey ideas and information relevant to the subject.
4W6 Conduct research to answer questions, including self-generated questions, and to build knowledge through investigating multiple aspects of a topic.

SWK:

- Why the aquaduct and dam were developed
- How to recognize significant information

SWBAT:

- Describe the impact of the aquaduct and dam on the environemnt and society at the time of devlopment
- Apply knowledge gathered from reading and field trips to brainstorm questions related to a current problem around their community
- Utilize their questions to create and investigate possible solutions

Technology Standards:

- **NYS Computer Science and Digital Fluency** (select at least 1 for Smart Start)**:**

4-6.DL.2 Select appropriate digital tools to communicate and collaborate while learning with others.
4-6.DL.4 Use a variety of digital tools and resources to create and revise digital artifacts.

- **ISTE:**

Other (Art, SEL, etc):

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Links to Standards/Reference Frameworks:
NYS NextGen ELA and Math, NGSS, NGSS by DCI Nat'l C3 SS Framework, NYS K-8 SS Standards, ISTE, Social Justice Standards, CASEL SEL Framework, NYS CS and Digital Fluency

Teaching/Learning Goal Notes for Stage 1:

STAGE 2: EVIDENCE & ASSESSMENTS:

Performance Task Narrative

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

Criteria for Success): *Provide students with a clear picture of success. Identify specific standards for success such as rubrics, checklists, quizzes, etc.*

- ❑ checklists
- ❑ rubrics
- ❑
- ❑

Other Evidence/Assessments:

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STAGE 3: THE LEARNING PLAN:

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 Events:

Monday- view slide show of aqueduct https://aqueduct.org/how-ny-became-empire-city
Tuesday – read aqueduct history https://aqueduct.org/oca-history
Wednesday – visit the Croton Reservoir and Dam, and the Weir
Thursday – work in groups to write information about an area of interest at either Reservoir/Dam or Weir
Friday - use Thinglink to narrate knowledge gained

Formative Assessments:

Monday – Los Angeles, The City That Water Built (Rdg); Padlet: How can we stop or prevent landslides? OR Picture of a dam or aqueduct before instruction and have students say what this picture makes them think of; repeat at end of instruction
Tuesday – How Romans Changed Construction Forever (Rdg)
Wednesday – exit tickets: Reflections on Field Trip
Thursday - writing
Friday – Thinglink; metimeter: How does our learning this week show innovation?

Notes/Resources:

Create "Our Project Wall"
Need 360 camera
Need support in introducing Thinglink

Week 2

Learning Events:

Monday – BrainPop Erosion; *Soil Erosion and How to Prevent It*, by Natalie Hyde: Find out where soil comes from, what erosion is, and many problems erosion may cause. (Ages 8-10)
Tuesday – Erosion (BrainPop Ext Reading Mother Nature)
Wednesday – Watch this time span video that shows the effects of weathering and erosion over the course of one year. Before you push "play", predict how far back the erosion will go.https://www.youtube.com/watch?v=ChEHQUMEkXw&ab_channel=framkid
Thursday – What Causes Landslides and Mudslides (Rdg)
Friday - How Can You Stop a Landslide (Lab)

Formative Assessments:

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Monday – BrainPop quiz; Making it personal: Weathering is all about breaking things down while erosion is carrying it away. Have you ever experienced a moment in your life were it felt like things were just breaking down or falling apart? When that occurred did you get carried away with how it was handled? While weathering and erosion can never be stopped completely, we can slow it down. When you start to feel your life being weathered and getting carried away, what kinds of steps can you take to buffer – to slow it down a bit?
Tuesday – Exit Ticket: How does the comic show erosion?
Wednesday - brainstorm a plan of how erosion can be prevented.
Thursday –
Friday – Lab Sheets

Notes/Resources:

Make sure to activate an EPIC account
Make sure to assign Erosion video and quiz in BrainPop
Print out Erosion Comic
Prep Landslide Lab

Week 3

Learning Events:

Monday – read aloud: what is EDP https://www.generationgenius.com/videolessons/engineering-design-process-video-for-kids/?g_adtype=search&g_adgroupid=107516202223&g_campaign=Teachers+-+Sci+-+Topics+-+6-8&g_campaignid=11097636175&g_keyword=engineering%20design%20process%20for%20kids&g_network=g&g_adid=649010521841&g_acctid=279-897-8338&g_keywordid=aud-935802473508:kwd-321431755403&utm_source=google&utm_medium=cpc&utm_term=engineering%20design%20process%20for%20kids&gclid=Cj0KCQjwuNemBhCBARIsADp74QSab0Mo_2slSRGf2SlqymKPLQ3B2B7zTGSc7PK9GbHS7UxOzjpBdFkaAq30EALw_wcB
HMH Intro to Engineering; Exploration 1 Quick Tower Building
Tuesday – Exploratrion 2 Designing a Listening Device
Wednesday – Exploration 3 What is Engineering?
Thursday – Exploration 4 How Engineers Solve Problems
Friday – FUNamental Reader – Desk Designers

Formative Assessments:

Monday -
Tuesday
Wednesday
Thursday
Friday – Lesson Check

Notes/Resources:

Add engineering vocab to project wall (technology, problem, constraints, criteria, engineering, fair test, prototype, technology, variable)
Be sure to get all materials for this week

Week 4

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Learning Events:

Monday – Dream Jobs: Environmental Engineer (Rdg); videos of Yonkers landslide

- https://www.yonkersny.gov/live/public-safety/emergency-management/disaster-specific-fact-sheets/landslides
- https://www.fox5ny.com/news/yonkers-landslides-knock-out-metro-north-hudson-service
- https://bronx.news12.com/landslide-in-yonkers-collapses-wall-buries-car-closes-roads
- https://news.hamlethub.com/swyonkers/life/1282-yonkers-mudslides-and-how-they-happen

Tuesday – use EDP to work through the challenge of Landslides in Yonkers, specifically around MLKA
Wednesday - use EDP to work through the challenge of Landslides in Yonkers, specifically around MLKA
Thursday – choose tech to publish idea (Canva, PowerPoint, Sway)
Friday - choose tech to publish idea (Canva, PowerPoint, Sway)

Formative Assessments:

Monday
Tuesday
Wednesday
Thursday
Friday

Extra Resources:

BrainPop Jr – Engineering and Design Process

BrainPop – Erosion

https://mysteryscience.com/water/mystery-5/erosion-engineering/152

These online books are free with registration as an educator on *Epic!*

- *How Do Water and Wind Change Rock?* by Ellen Lawrence: An interesting book about how The Wave, a rock formation in Arizona, was created. (Ages 7-9)
- *Soil Erosion and How to Prevent It*, by Natalie Hyde: Find out where soil comes from, what erosion is, and many problems erosion may cause. (Ages 8-10)
- *Examining Erosion* by Joelle Riley: A fascinating book that discusses the causes, problems, and benefits of erosion. (Ages 9-11)

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- Watch this time span video that shows the effects of weathering and erosion over the course of one year. Before you push “play”, predict how far back the erosion will go. Afterwards, brainstorm a plan of how erosion can be prevented.
    - https://www.youtube.com/watch?v=ChEHQUMEkXw&ab_channel=framkid

- Making it personal: Weathering is all about breaking things down while erosion is carrying it away. Have you ever experienced a moment in your life were it felt like things were just breaking down or falling apart? When that occurred did you get carried away with how it was handled? While weathering and erosion can never be stopped completely, we can slow it down. When you start to feel your life being weathered and getting carried away, what kinds of steps can you take to buffer – to slow it down a bit?

- Quizziz – EDP

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