

**I. Title of Project**

Developing Themes in the Content Areas

**Curriculum Topic-** Social Studies; Trade, communication, shelter, technology,

**Presentation-** Greenvale Elementary School and the

Westchester STEAM Conference

**Number of Educators-** Approximately 15

**Grade levels-** Elementary focus on grades 2-5

**II. Standards Addressed**

**NGSS**

**1-PS4-1 Waves and Their Applications in Technologies for Information Transfer**

Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.

**1-PS4-4 Waves and Their Applications in Technologies for Information Transfer**

Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.

**1-PS4 Waves and Their Applications in Technologies for Information Transfer**

**4-PS3-2 Energy**

Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.

#### 4-PS3-4 Energy

Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.

#### 4-PS4-3 Waves and Their Applications in Technologies for Information Transfer

Generate and compare multiple solutions that use patterns to transfer information.

#### 5-ESS3-1 Earth and Human Activity

Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

#### 5-PS2 Motion and Stability: Forces and Interactions

ESS3-3 Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.

### **New York Social Studies Framework**

4.2 NATIVE AMERICAN\* GROUPS AND THE ENVIRONMENT: Native American groups, chiefly the Haudenosaunee (Iroquois) and Algonquian-speaking groups, inhabited the region that became New York State. These people interacted with the environment and developed unique cultures.

5.1 EARLY PEOPLES OF THE AMERICAS: The first humans in the Western Hemisphere modified their physical environment as well as adapted to their environment. Their interactions with their environment led to various innovations and to the development of unique cultures.

3.3 Geographic factors often influence where people settle and form communities. People adapt to and modify their environment in different ways to meet their needs.

2.8 Communities face different challenges in meeting their needs and wants.

### **Common Core State Standards for English Language Arts**

1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on *grade 4 topics and texts*, building on others' ideas and expressing their own clearly.

a. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.

b. Follow agreed-upon rules for discussions and carry out assigned roles.

### **III. Summary of Project**

The purpose of this project is to find connecting themes within curriculum areas where STEM projects could be integrated. Throughout the year, educators are continuously trying to keep up with the demands of Common Core Curriculum. It seems that whenever curriculum changes are made, more content is added to each subject area. Between required curriculum and testing, there is very little time to integrate STEM activities. Therefore, the goal of this project is to identify themes that connect curriculum and build in STEM projects that would enhance learning.

Identifying curriculum connections and embedding STEM activities would provide the students an opportunity for collaboration and problem solving within the unit.

Students will be engaged as active learners and have the ability to connect concepts to real world experiences.

#### **IV. Pre-questions Survey List**

1. Which 21<sup>st</sup> century skills do believe students should practice as a student in your classroom? Circle all that apply.

**Creativity and Innovation**

**Problem Solving and Critical Thinking**

**Communication and Collaboration**

**Information Literacy**

**Core Content Knowledge**

**Life and Job Skills**

**Ethical and Emotional Awareness**

1. Please choose two skills that you feel students in your class find difficult.

\_\_\_\_\_

2. Would you include STEM activities to enhance social studies, literacy, or mathematics if they connected to a common theme?

\_\_\_\_\_

3. If you had an opportunity would you collaborate on one STEM project that aligned with your grade level curriculum.

\_\_\_\_\_

4. Would you be interested in developing STEM activities for your students.

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5. If so, what curriculum areas would you be interested in integrating some STEM activities?
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**V. Brief Description of the Actual Professional Development Training**

The professional development training would begin with a short discussion about 21<sup>st</sup> century skills using a mind map. Next, the teachers would identify the alignments of similar themes within the New York State social studies curriculum. Focusing on a specific concept, they will be introduced to a STEM challenge using the design process. Teams will be formed to build a communication device, mobile home, and boat. Each activity would be aligned to the k-5 social studies' framework. Time would be allotted to brainstorm the positive and negative aspects of integrating stem. Finally, the session would end with a circle, square, triangle evaluation form.

**VII. Brief Outline of the Activities in the Pick-up Unit**

**VIII. What NASA data did you include?**

**Understanding the Design Process**

<https://www.nasa.gov/audience/foreducators/best/edp.html>

[https://www.nasa.gov/pdf/473907main\\_Packing\\_Lesson1\\_DBE.pdf](https://www.nasa.gov/pdf/473907main_Packing_Lesson1_DBE.pdf)

<https://www.nasa.gov/sites/default/files/atoms/files/noise-chevrons-student-guide.pdf>

<https://www.jpl.nasa.gov/video/details.php?id=1402>

<https://www.knowitall.org/series/nasa-scifiles>

## **IX. Follow-up Activities & Post-questions Survey List**

We have a T-share file in our school that all teachers can access throughout the year. The file contains a place for STEM activities that I have been organizing for each grade level. When the file is opened, the teachers can search by subject area and content. There is also a file for mindfulness and collaboration activities. Hopefully, this professional development will open a door for a Professional Learning Community that will focus on STEM opportunities in the classroom

### **Post Questions**

1. Did you find the presentation informative?
2. Do you feel more comfortable adding a STEM activity to your social studies lesson?
3. What other area would want to incorporate STEM?
4. Would you be interested in participating in a Professional Learning Community to discuss STEM opportunities for students?

Thank you for taking this survey.