My name is Evan Mirenberg and I am a teacher of a 5th grade self contained (12:1:1) special education class at P.S. 188 located in Coney Island, Brooklyn. Currently, I have also taken on the responsibility of being the STEM Coordinator with in our school. The school is centralized in a high poverty area, and as educators we face many challenges. A major barrier that I have encountered is that students have extremely low self confidence when it pertains to learning new or advanced topics. Many of them give up immediately, while others don’t even make an attempt. STEM education has changed all of that.

In addition to my class, I am also working with a 2nd and 3rd grade ICT class on many collaborative projects involving innovative inquiry based, technology infused, hand’s on learning. During our pilot year, students from both groups created robotic machines and mechanisms. After the construction, students had the opportunity to utilize netbooks to program their robots in order to solve real world problems. They were then given the opportunity to test their designs out to formulate data, which would then be used to enhance their machine.

This year P.S. 188 is conquering another real world problem. Students began learning about the human impact on our environment. They are also being introduced to the number one problem effecting our world; Global Warming. As we discuss various ways to slow Global Warming, such as utilizing renewable energy, students get a hand’s on learning experience by creating simple machines that operate solely on renewable power.

Some of the projects that I had planned for this year involve building a Solar Station. This will allow the students to consider evidence through observations, and experiment using average voltage and current as a measure of performance. In order to incorporate technology into this lesson, they will get a chance to use a smart board and a laptop to create a program that will power their Solar Station. They will also investigate and predict the effect of the angles of illumination on solar panel performance.

To incorporate engineering into this topic, students will investigate and evaluate variables used in building models. They will identify the source of energy utilized by the model and use their knowledge of engineering design principles when building their Solar Station. Lastly, they will utilize mathematics into this topic by presenting investigation and prediction data in a tabular form. This will allow the students to consider evidence through observations, and experiment using average voltage and current as a measure of performance. In addition to the Solar Station, they will also have the ability to construct Wind Turbines, Hydro Turbines, Solar Vehicles, a Lawn Mower, and a fan to name a few. All of these projects will use renewable energy as a power source and were designed with the National Science Education Standards as the foundation for each build.

It is the belief of many educators that STEM education seeks to cultivate soft skills such as scientific inquiry and problem solving. By enhancing these skills, STEM seeks to build a
“STEM-literate” society. This STEM literacy refers to an individual’s ability to apply his/her understanding of how the world works within these four domains. All projects conducted are differentiated utilizing flexible grouping depending on the task and the students’ needs. This step is an integral part of the learning processes in order to target the multitude of learning styles attainable for each student. For the visual and tactile learner, the use of the smartboard as well as having the ability to count the pegs on the Lego blocks help students ensure they are selecting the correct pieces to complete the build. For the auditory learner, there are short videos related to the project that read the directions and challenge aloud in order to target the visual learner in an engaging way.

The project that was started by our STEM education team this year directly pertains to the real world. To be more specific, it had to deal with our community. The task was laid out before us to create a scaled down model of famous landmarks around Coney Island utilizing Lego’s. I found that this project related greatly to real world application because of all the collaboration, planning, and mentoring that went into the creation of this display. Our elementary school, I.S 303, and John Dewey high school came together to engineer a scaled down model of landmark attractions around Coney Island that was powered strictly through the use of solar panels. This project will culminate our unit of study on renewable energy and give students a deeper understanding of how this type of energy could save our planet.