OAKWAY INTERMEDIATE STEM Action Plan 2010

1. **Big Idea** - Through the application of math, science, social studies and language skills and concepts, students will establish a representation of a civilization beyond Earth.

2. **B.E.A.T. “Beyond Earth Action Team”** - As part of BEAT, students will participate in a variety of “Countdown” projects that will develop skills and knowledge that will aid them in the completion of the final “Launch” project. The “Launch” Project will challenge students to develop a multi-faceted representation of a civilization on a new world.

3. **Essential Question** - How can humans survive and prosper on a colony separate from Earth?

4. **Goals and Objectives** - Students will utilize cross-curricular concepts and skills, based on 4th Grade state standards, to demonstrate imaginative and creative thinking as engineers, designers, and problem solvers.

5. **Learning Experiences (Timeline)**

   **Countdown Challenges (Science):**
   1. Inquiry: create a vessel that will protect an egg “passenger” on impact.
   2. Electricity: create a structure that will support all the components light bulb circuit.
   3. Weather: improve/redesign an enclosed structure that will sustain the water cycle.
   4. Organisms: improve/redesign the water cycle structure so that organisms can survive and flourish inside it.
   5. Astronomy: construct and launch a model rocket.

   **Countdown Challenges (SS):**
   - Map Skills: create a representation of our school to lead other teams to a specific location.
   - Native Americans: using natural materials design a habitation module to protect a paper doll family from the effects of wind and rain.
   - European Explorers: design a working compass.
   - Colonies: design a water wheel to lift a given weight.
   - Western Movement: design a system for separating “gold” fragments from sand

   **Countdown Challenges (Math Skills):**
   - Relationships between two- and three-dimensional shapes and the representation of location and movement (coordinate grids)
   - Decimal notation as an extension of the place-value system; the relationship between fractions and decimals; adding and subtracting decimals (money)
   - Use appropriate tools to measure objects to the nearest unit (length, mass, etc)
   - Accurate methods of determining area and perimeter
6. Launch Project
   • Using the concepts and skills learned in the “Countdown Challenges”, students will design and create a representation of a colony on a new world that addresses the basic needs of food, water, and shelter, and establishes a system of government.

7. Assessments
   • Rubrics for each Countdown Challenge
   • Countdown Challenge Journal
   • Rubric for the Launch Project
   • Traditional curriculum assessments

8. Resources
   • Science lab materials
   • PTO and parent/volunteer support
   • Business partners
   • STEM resources and website

9. Positive Behavior Intervention System (Work in Progress)
   • Use Naval Ranks for levels of behavior recognition:
     - Crew Member
       - Ensign
       - Lieutenant
       - Commander
       - Captain
       - Admiral
   • Each student begins as a crew member and advances to higher rank through desired behaviors earning rewards and privileges with each rank.
   • Students earn personal points for completing homework, abiding by school and classroom rules and may earn bonus points for additional behaviors.