Defying Gravity

Pre-field trip preparation suggestions

Terry Lee Wells Nevada Discovery Museum

Students will work collectively to design a device that defies gravity. This engaging activity will boost student's creativity and problem solving skills as they explore principles of magnetism and engineering. This is a great lab to help students think outside the box.

During your Discovery Lab students will be expected to:

- Sit in groups of four and work cooperatively with others at the table.
- Students should be prepared to give their full attention to the Lab instructors when given the quiet signal.
- Follow the hands-on procedures just as the Lab teacher or assistant explains them and handle materials and equipment carefully.

It is important that teachers and chaperones:

- Help focus the students' attention.
- Assist students with lab activities through questioning allowing the student to do the actual building and decision making. For example a parent might ask, "I see your base is shaky, what could you do to strengthen it?"
- Engage students at a higher level by asking open-ended questions throughout the class. For example: why did you choose _____?
- Turn off cell phones and other electronic devices during the class.

Literary connection:

To get students excited about the upcoming Discovery lesson we suggest reading the following story with your students: Engineering the ABC's: How Engineers Shape Our World by Patty O'Brien Novak. Engineering the ABC's answers questions about now everyday things work and how engineering relates to so many parts of a child's daily life. In an entertaining and engaging way, this book shows how engineers shape our world.

Next Generation Science Standards:

5-PS1-3. Make observations and measurements to identify materials based on their properties.

3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

Nevada Science Standards:

P.5.A.3 Students know materials can be classified by their observable physical and chemical properties (e.g., magnetism, conductivity, density, and solubility).

NS.5.A Students understand that science involves asking and answering questions and comparing the answers to what scientists know about the world.