STEM Blasting Off at Blue Ridge Elementary

**Big Ideas**

- Thinking like an engineer
- Working as a team
- Collaboration
- Communicating results

**Goals and Objectives**

- One STEM Project per semester
  - 1st project to be completed by December 19, 2012
  - 2nd project to be completed by May 25, 2013
- Lessons 45-60 minutes every day for 3 weeks
- 5th Grade Team, Support Staff responsible for implementation

**Timeline**

- Mission 1 by December 19, 2012 – “A Hat for Ivan”
  - Training for 5th grade team and support staff (1 day)
  - Read *A Hat for Ivan* with class, present mission, have students restate problem, and brainstorm (1 day)
  - Have students research simple machines, bring in community examples (2 days)
  - Construct hats (2 days)
  - Present findings (2 days)
  - Reflection-School parade of hats (1 day)

  - Instructor Training with ICAR October 19, 2012
  - Present mission, students restate problem, and brainstorm (2 days)
  - Read and research forces and motion (2 days)
  - Hands on work to complete mission (1 week)
  - Testing and redesign to successfully complete mission (2 days)
  - Reflection of findings (2 days)
Assessments

- Missions 1 and 2
  - Rubric for journal entries
  - Performance of overall mission completion

Resources

- Human-STEM Team, 5th Grade Team, Support Staff, High School Physics Class
- Monetary-Jet Toy kids/ICAR Training (free)
- Material “A Hat for Ivan”-newspaper, construction paper, scissors, pipe cleaners, brads, index cards, balloons, straws, tape, glue, research resources (computer, library, IPADs), magazines, crafts
- Hamilton Career Center/Michelin for guests speakers/experts

Classroom Preparation

- Mission 1 – Area to make hats (cafeteria in late afternoon?)
- Mission 2 – Move to stage area in cafeteria

Learning Experiences

- Jet Toy Training/ICAR

Example

- Jet Toys
  - Training-October 19
  - Present Problem/restate/brainstorm
  - Read and research
  - Develop solution to problem
  - Communicate findings (presentation)
  - Reflection
**Name of Problem:** Design and make a hat representing your favorite book character following these guidelines: hat represents one character, has 4 levers, 2 pop ups, fits your head, can be worn inside for one school day, and use only materials provided.

**Name of Author:** Michele Strickland, Roz Pitts, Jennifer Padgett

**Content Area:** Science

**Course:** 5th Grade

**Unit:** Simple Machines

**Standards:**
Science: 6-5.7

**Big Ideas:**
- Thinking like an engineer
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**Essential Questions:**
- What is a simple machine?
- How do simple machines reduce the amount of force required to do work?

**Scenario:** You’ve been given the challenge to design a new character hat for Lids that will be sold nationwide. Lids wants the hat to represent a favorite book character of kids in order to promote sales. Your hat must represent one character, have 4 levers, 2 pop ups, fit your head, be able to be worn for an entire school day, and use only the materials provided.

**Materials and Resources:**
- Construction paper
- Fabric straps
- Newspaper
- Paper cut from paper bags
- Glue
- Tape
- Scrap paper (tissue, wallpaper, wrapping, card, etc.)
- Brads
- Yarn scraps
- Ribbon scraps
- String
- Paper clips
- Twist ties
- Cardboard
Content Information:

1. Training for 5th grade team and support staff (1 day)
2. Read A Hat for Ivan with class, present mission, have students restate problem, and brainstorm (1 day)
3. Have students research simple machines, bring in community examples (2 days)
4. Construct hats (2 days)
5. Present findings (2 days)
6. Reflection-School parade of hats (1 day)

Deliverables:

The student will create a hat that meets specification requirements.

Parameters:

- represent one character
- have 4 levers
- 2 pop ups
- fit your head
- be able to be worn for an entire school day
- use only the materials provided

Assessment:

- Rubric that assesses Guided Portfolio, Hat Criteria, and Oral Presentation