Lesson Title	Introduction to Forces and Motion
Length of Lesson	One (50 minute) class period
Created By	Bo Cherry
Subject	General Science
Grade Level	7th grade
State Standards	7th: 1 c (Inquiry); 2 f (Physical Science)
DOK Level	DOK 3
DOK Application	Prove, Compare, Classify
National Standards	5-8: A (Inquiry); B (Physical Science)
Graduate Research Element	Several forces found in natural systems greatly impact the earth's surface and the makeup of the waterways.

Student Learning Goal:
MS 7th Grade:
(Inquiry) 1 (c) Discriminate among observations, inferences, and predictions. (DOK 1).; (Physical Science) 2 (f) Describe the effects of unbalanced forces on the speed or direction of an object's motion. (DOK 2)

National Science Education Standards of Content 5-8:
(Inquiry - A) Develop descriptions, explanations, predictions, and models using evidence; Think critically and logically to make the relationships between evidence and explanations; (Physical Science - B) Forces and Motion.

Materials Needed (supplies, hand-outs, resources)
Computer, Projecter, Handout for note-taking (INSPIRE_HO_Cherry_09.30.11)

Lesson Performance Task/Assessment:
This lesson will begin with a short video (see anticipatory set). This video will act as a capture for the students' interest, but will also serve as an example of force. This will be expanded on throughout the lesson with examples shown by the instructor. Students will be given a handout (INSPIRE_HO_Cherry_09.30.11) which will have a table with examples on the left. They will be expected to write comments and definitions on each example. This lesson will be mostly hands-on as the instructor will be showing various examples of balances and unbalanced forces found in everyday life.

Lesson Relevance to Performance Task and Students:
Given that this lesson will be the students' first experience with force and motion, the students will learn the fundamentals and terminology involved in simple physics. By showing and explaining that "simple" examples of everyday tasks and events are in reality much more complex than it may seem, students will begin to see the physics involved in everyday life. Also, to relate this topic to graduate research, discussion on glaciers (the most powerful erosive agent on earth) and rivers (also important erosive agents) will get students thinking "outside the box"

Anticipatory Set/Capture Interest:
The anticipatory set for this lesson will be an interesting video (http://www.youtube.com/watch?v=54fAE2iN2II), which will be displayed via the projector or promethean board (smart board).

Guided Practice:
This lesson will be guided throughout most of the lesson in that the instructor will be showing and explaining several examples of forces. The provided handout is also somewhat guided in that it lays out the examples in order on a table for the students. This will allow the instructor to cover more content as the students do not have to make their own table and can follow easily.

Independent Practice:
Students will be expected to fill out the handout as the instructor goes over each demonstration.

Remediation and/or Enrichment:
Remediation - Individual IEP
Enrichment - Have students provide examples of balanced and unbalanced forces that they find in their daily lives outside of school.

Check(s) for Understanding:
The instructor should be moving around the classroom in order to check the students' tables as each demonstration is performed. Also, formative feedback from the students will be important as a check for understanding.

Closure:
Question 1: Describe the forces (balanced and unbalanced) involved in the pitching and hitting of a home run in baseball.

Question 2: Describe the forces involved in a rain event (from the rain falling to the water moving to the sea).

Possible Alternate Subject Integrations:
Physics, Physical Science

Teacher Notes:
Some examples of demonstrations include:
-Two people pushing on a door (one example is when forces are balanced, one where the door is moved by a stronger force)
-Loading a board with weight until it breaks
-See-Saw (or model of one)