LESSON PLAN

SPACE WEIGHT

Objectives:

The students will understand:

- How to collect data and determine varying outcomes reliant upon the input of information
- That models can be representatives of something else
- Anyone can be a scientist and test hypothesis
- How to calculate central measures of tendency
- How much they weigh at each location
- Mass and density
- Objects in the sky
- Affects of gravity on weight

Standards Assessed:

- Scientific Method
- Collecting Data
- Scientific Inquiry
- Testing Hypothesis
- Models for Representation
- Central Measures of Tendency
- Measuring with non-standard units
- Mass and density
- Objects in the sky
- Effects of gravity

New York Standards:

K: S1.1a, S1.2.3, S1.3, S1.3.2, PS1.1c, PS3.1a, PS5.1c
1st: S1.1a, S1.2.3, S1.3, S1.3.2, PS1.1c, PS3.1a, PS5.1c
2nd: S1.1a, S1.2.3, S1.3, S1.3.2, PS1.1c, PS3.1a, PS5.1c
3rd: S1.1a, S1.2.3, S1.3, S1.3.2, PS1.1c, PS3.1a, PS5.1c
4th: S1.1a, S1.2.3, S1.3, S1.3.2, PS1.1c, PS3.1a, PS5.1c
5th: S1.1.2, S1.2a, S1.2b, S2.2b, PS1.1a-j, PS3.1h, PS5.2a
6th: S1.1.2, S1.2a, S1.2b, S2.2b, PS1.1a-j, PS3.1h, PS5.2a
7th: S1.1.2, S1.2a, S1.2b, S2.2b, PS1.1a-j, PS3.1h, PS5.2a
8th: S1.1.2, S1.2a, S1.2b, S2.2b, PS1.1a-j, PS3.1h, PS5.2a

Materials:

- Space Weight Exhibit
- Data Collection Card

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Procedures: The students will step up on the scale and write down their weights for the Earth, Moon, and Mars. Weight being identified at various places helps students understand that there are different places in the sky, but also that their body does not change but their weight does. The scale only gives pound measurements, but the students can elaborate this by converting to metric units once they are back in the classroom. A graph can be made for each location of how much each student weighs in each location. From the graph developed in the classroom, the teacher can then determine the central measures of tendency. The class also needs to discuss mass and density and why it changes when your physical body does not change. What affect does gravity play in the weight differences? Are the weights different because there is less of a gravitational pull on the moon and Mars then on Earth?

Independent Practice: The exhibit is completely independent.

Assessment:

- The student will write their outcome on their post teaching card
- Teacher observation of participation in classroom discussion

Modifications (Special Education Students):
Special education students may need assistance in writing down their weights on their data collection cards and may need assistance on where to stand.

Extensions (Gifted Students):
Gifted students can determine the 'Earth' weight of an object and then using the ratio of their weight; determine the objects weight at the other places as well.

Generalization to other Subjects:
Measuring with non-standard units and central measures of tendency can generalize to math.