MIND TREKKERS
Levitron Lesson Plan

Amount of time Demo takes: 1:00-3:00 min

Materials:
1. Top*
2. Weights*
3. Magnetic Base*
4. Clear plastic cap for base*
5. Legs for base*
6. Small level
7. Something magnetic (possibly paper clips) to help explain the demo later
* included in box

Set up instructions:
1. Remove base from box and screw the legs into the holes of the base (these legs are used to level to base)
2. Level the base by adjusting the legs.
3. Place clear plastic lid on the top with flat side up.
4. Place the top in the center of the clear plastic lid and spin. When the top is spun lift the lid slowly from the base, when doing this pay attention to the behavior of the top; if the top seems to “fly” off the lid very dramatically then more weight needs to be added to the top, if the top seems to fall to one side every time then re-check the base to make sure it is level. If you raise the leg that is in the direction that the top keeps falling it will fix the problem.
5. If the top rises off the plate and hovers (can float in air for 2-3min) then you are ready to do this again.
6. Do not spin the top too fast. When spinning it faster it has a tendency to fly off more.

SAFETY!
1. Do not have participants stand too close to the demo area -- the top can sometimes fly a couple of feet when trying to spin the top.

Lesson’s big idea
- The base and the top are magnetized oppositely. This means that there is a force pushing upward on the top and the top downward on the base.
- When spinning it creates a stabilizing force which allows it to levitate (to get all the details visit the website listed in the references or the booklet included in the box).
- It floats because there is a zero net force at the spot that it is floating in, meaning the force from the top and the base are equivalent at this point.

Instructional Procedure
1. Use your hand and different items (cup) to place over and under the top while it is spinning, make sure to do this slowly to ensure longevity of spin.
Assessment
Sample questions you can ask:
1. To make this work which parts were magnetized? (Show by having each part respectively pick something up that is magnetic)

References:
A great learning reference is: http://www.lauralee.com/physics.htm, there are also many you tube videos that show this in action if having troubles setting it up/want to learn more tricks.

Magnet diagrams are from the Levitron website: http://www.levitron.com/physics.html

National Standards:
K-4 Content Standard B: Physical Science, Light, heat, electricity and magnetism
5-8 Content Standard B: Physical Science, Transfer of energy, Motions and forces
9-12 Content Standard B: Physical Science, Motions and forces, Interactions of energy and matter