Levitron Lesson Plan

Amount of time Demo takes: 1-5 mins.
Try this at home!

Materials
● Top*
● Weights*
● Magnetic Base*
● Clear plastic cap for base*
● Legs for base*
● Small level
● Washers (10) * included in box

Set-up Instructions and Instructional Procedure
1. Remove base from box and screw legs into holes of the 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 spinning lift the lid **slowly** from the base, when doing this pay attention to the behavior of the top.
   a. If the top seems to “fly” off the lid very dramatically then more weight needs to be added to the top.
   b. 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 2-3 mins.) this is a success.
6. Do not spin the top too fast; there will be is a tendency for the top fly off.
7. 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.

SAFETY!
● 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. This keeps the top in place vertically.
- The spinning creates a stabilizing force called a gyroscope. This keeps the top from moving side to side.
- 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.

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

Next Generation Science Standards

- K-4
  - K-PS2-1
  - 3-PS2-3
- 6-8
  - MS-PS2-2/3/5
- 9-12
  - HS-PS3-1/3/5