Hollow Tube and Disc

Apparatus

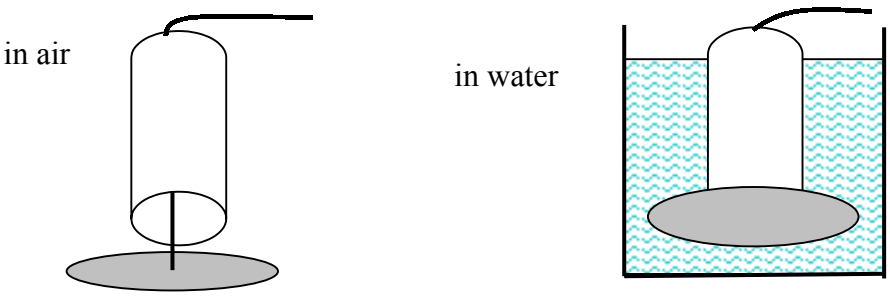
A tube and a disc larger than the end of the tube with a string attached to it.

Action

The students use the string to hold the disc flush against the tube and dip it into water. The disc stays against the tube when they release the string. When they release the string in air the disc falls away.

The Physics

The disc stays attached when there is a pressure difference exerting a force which holds it in place. When the pressure difference decreases such that the force falls below *mg* of the disc, the disc falls.



Accompanying sheet

Hollow Tube and Disc

Use the string to hold the disc in place as you put it into the water.
Now release the string and see what happens.
Does this happen in air?

Why does the disc fall away in air, but remain attached in the water?