Answer to "Buoyancy and Newton's Third Law"

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The question: What will happen to the apparent mass of a beaker of water once a dowel clamped into a nearby retort stand is submerged in the water?

The answer: the apparent mass, as indicated by the balance, of the water + beaker + submerged dowel is greater than the mass of just the water and beaker. ***The physics***: Archimedes' principle states that the water exerts an upward buoyant force on the dowel, and by Newton's third law of motion, the dowel must therefore exert a downward force on the water. This additional downward force is transmitted to the balance pan. Another way to think about this is that as the dowel is submerged in the water, the water level rises, and hence the pressure exerted by the water on the bottom of the beaker increases.