Dancing Raisins

Background info:

Raisins are denser than water so initially sink. Since the surface of the raisins is rough, tiny bubbles of carbon dioxide gas are attracted to it. These bubbles increase the volume of the raisin substantially, but contribute very little to its mass, causing it to be carried upward by the more dense fluid surrounding it. The bubbles that attach themselves to the raisins are like little life jackets that make the raisins more buoyant by increasing their volume.

Once the raisins reach the top, the bubbles pop upon exposure to the air, causing the raisins to sink.

The same scientific principles are at work when a child uses a set of inflated armbands or an inner tube at the pool. The volume of the armbands increases the child's volume considerably. The mass of the armbands, however, is very small. The overall effect is to

lower the density of the child wearing the armbands to less than that of the pool water, so that the child can float.

You will need:

- Lemonade (needs to be very fizzy, not going flat)
- Raisins or sultanas (fresh raisins work best)

1) Fill the glass with lemonade.
2) Drop 10-15 raisins into the soda.

Questions:

The following questions are suggestions only, the main focus of the activity is careful observation, engaging children's curiosity and encouraging their own questions. Questions used will depend on age, learning capability, communication skills, etc.

This is a good introduction into the composition of solids, liquids and gases. In general, solids are denser (have more matter squashed into the same space) than liquids, and liquids are denser than gases. Children can pretend to be the molecules of a solid all joined and squashed together, then liquid molecules – some joined and not so squashed, then gases – few joins and moving freely with lots of spaces.

Children could move on to investigate which materials float and compare their density/weight (both linked) to those objects which sink. (Be careful – weight is not the only factor – density is weight per volume)

What can you see?

What is causing the raisins to rise?

What is causing the raisins to fall?

What is in the bubbles?

Will it work with different drinks?

Can you find other objects that dance?