2.1 Investigating the properties of solids, liquids and gases

At the end of this activity students will be able to:

- identify some properties of solids, liquids and gases.

What ideas might your students already have?

Students might be able to give examples of substances in each state. They should also be able to suggest some properties of each state, in their own words, from the previous activity. They may still have difficulty recognizing air and other gases as materials or substances.

Equipment list

Each GROUP will require:

- wooden block (if possible needs to fit within syringe and beakers)
- 100 mL water in an measuring cylinder
- 100 mL beaker
- 250 mL beaker
- large syringe

Each STUDENT will require:

- ***Notebook***
- Safety glasses

Things to consider and hints for success

Students should first complete all tests on the solid, and then repeat the same tests for the liquid and gas. You may have to guide them with the air, as they cannot see volume or shape. You could get them to predict and then discuss what they would observe if they could see the air. Then get them to explain it. This could be done as a class after they have completed solids and liquids.

When doing **Test 3** on the liquid, it is important to point out they must remove all air from the syringe, otherwise it may look like it is compressing because the air in the cylinder is compressing. To remove the air, fill the syringe with water by drawing it into the syringe, then tip the syringe upside down and push the plunger until water starts to dribble out.

So you don't give away the answer to the questions, explain to students: *Make sure you remove all the air from the syringe when testing the liquid. If you don't, you will be testing a gas and a liquid and this will affect your observations.*

Students may complete a *Risk Assessment* before commencing this activity.

Teacher content information:

This activity uses the **Predict-Observe-Explain** strategy:

> ***Predict*** – before students start each test they should predict what might happen and record it in their ***Notebooks***.
>
> ***Observe*** – students conduct the test and record their observations.
>
> ***Explain*** – students write an explanation for their observations.

Lesson plan

Step 1: Students work through each test on solids liquids and gases, recording their results in their ***Notebooks***.

Step 2: Discuss their results as a class.

Follow up:

You could ask students to do a summary table of their/the class results.