



Impermeable or Permeable

Permeable surfaces in a school such as gardens, grass and stone pebble pathways, allow rainwater to soak into the soil and replenish groundwater and provide nourishment for plants. Permeable surfaces reduce the volume of water entering stormwater drains, which helps reduce stormwater pollution, flooding, and sedimentation in estuaries.

The less permeable a surface is, the harder it is for water to pass through it.

Learning Intention

We are investigating the surfaces in the school to find out which are impermeable and which are more permeable. This will help us make informed decisions and recommendations on landscape type at our school.

You will need:

- Different surface types in your school, eg concrete path, porous pavers, pebbles or mulched garden
- Ice cream containers
- 500ml water container
- Sellotape or plasticine
- Stop watch

Instructions:

1. Cut the bottom out of an ice cream container.
2. Sellotape or plasticine the ice cream container onto a concrete surface to create a watertight seal.
3. Begin experiment - Pour 500ml of water into the sealed ice cream container.
4. Time how long it takes for the water to disappear.
5. Repeat 3 times and average the results.
6. Repeat experiment on porous pavers, garden area covered in pebbles or mulched ground.
7. Calculate permeability in litres per second. Divide litres poured onto the surface by how many seconds it takes to run through. i.e. 500mls of water that takes 35 secs = 0.0143 l/s. A higher number means the material is more permeable.
8. Draw conclusions.

Reflection:

1. What could be possible alternatives for impermeable surfaces for the school in the future?
2. Use the mapping exercise to find out the proportion of impermeable surface to permeable surface at your school. How much of your school area allows water to soak into the ground?



Mapping our school grounds

Why map? Accurate mapping of permeable and impermeable surfaces, native plantings, ornamental and food production gardens gives a pictorial overview of the school's ecosystem. From this a school can form a record of the living landscape and identify where improvements can be made.

Learning Intention

We are learning to map the features of the school and to use the information to decide on future improvements and maintenance of the living landscape.

You will need:

1. Trundle wheel and tape measure to measure distance
2. Measurements from data collection teams
3. Large piece of grid-lined paper or use the back of an old thermal-lined curtain
4. Pencil, colouring pencils, ruler and calculators
5. Aerial photo or birds eye plan of the school

Instructions:

1. On the grid-lined paper, draw a scale map of the entire school. An aerial photo or school property map will help you do this.
2. Draw to scale the area of buildings, carparks, playing fields and gardens. Use the data collected by your Landscape Type measurement teams to help you do this. You may have to make extra measurements so that you place these features in the right location on your map. Include a key for features on the map.
3. Label each feature on your map with the data collection reference names.
4. Mark on your map where you have large trees taller than a single-storey building and if you have fruit and nut trees in your orchard.
5. Once you are happy with this base plan, record the measurement date on it for future reference and photograph it for next year's Living Landscape Data Collection. Next year you can mark on any changes to the garden area or new buildings and then calculate your new Landscape Type Area.

School Landscape Type Map

