



Section 6

Embedding care for our outdoor spaces into our experiences

6.2 Why soil matters

Adapted from Scottish Forestry (2016) The World Beneath Our Feet [curriculum resource](#) available on the Outdoor and Woodland Learning Scotland website.

What is soil?

In general, soil is:

- Made up of 45% minerals from underlying rocks: 25% water, 25% air and 5% organic matter
- Formed over time - and this can be up to 1000 years
- Made through the activity of living things such as worms, fungi and microbes that live in the soil
- Kept healthy by animals which burrow or dig, such as worms, moles and foxes
- Reliant on specific climatic conditions, which is why soil varies so much from place to place



Super soils

Did you know that:

- One quarter of the world's biodiversity is found in soil. This supports most of the food webs on our planet.
- Soils filter our water and purify our air.
- Healthy soils store more carbon than all the forests in the world, helping us combat climate change. **Peatlands** in particular, hold most of Scotland's carbon store. This rare habitat needs special care.
- 95% of all our food relies on healthy soils.
- Soils are an important part of every ecosystem. Some soils are more susceptible to trampling and compaction than others.
- If your children dig carefully into undisturbed soil, then it is possible they will be able to see the different layers of soil underneath the ground. Eventually they will meet bedrock, before New Zealand.

Soil can be harmed by:

- **Erosion** is what happens when the soil is lost. This happens through tree loss, drainage and intensive farming. It is made worse by the effects of wind, drought and water.
- **Loss of organic matter** by erosion, compaction and sealing. Soil organisms starve and the loss of biodiversity impacts on the ability of the soil to combat 'pests'.
- **Sealing** is what happens when water is prevented from going into the soil but just runs over the surface.
- **Compaction can be** caused by trampling. It destroys the structure of soil and its biodiversity.



Section 6

Embedding care for our outdoor spaces into our experiences

The difference between soil and compost

- **Homemade or garden compost** is produced when you compost fruit and vegetable waste on-site. You add it around the base of plants or mixed into the soil and it acts as a conditioner, improving the soil structure, water retention and providing nutrients. It does not contain fertiliser. See Section [6.11 Food and composting](#)
- **Commercial potting compost** is more like a soil than a compost. It's specific to growing plants and not for playing with. It will contain fertiliser. Only use peat free compost.
- **Topsoil** can be used in the digging or mud area. Be aware that no topsoil, even sterilised topsoil is guaranteed free of glass - it very occasionally gets through the sieving process so be aware of this potential hazard.

Invasive Species Alert!

New Zealand flatworms are easily transferred with the movement of soil. To find out more and to identify them, [AboutFlatWorms](#)



6.3 Mud

“There is little more important in our physical world than earth and water and they are truly intriguing things, especially when they interact.”

(White & Edwards, 2018)

Why mud matters

Mud is a mix of soil and water. Patches of mud can quickly appear and grow. In the right place, these offer deep, sensory play and can connect children to the land in ways that cannot always be verbalised. Experiencing mud is an essential part of childhood.

Building upon prior learning

Observe and involve interested children in looking at the following:

- What mud exists and where in your outdoor space?
- Which muddy places are children drawn to and which are left alone?
- Which provide seasonal interest?
- How do our children experience mud?



Section 6

Embedding care for our outdoor spaces into our experiences

Map your mud patches and take photos. This helps with observing if and how they change over time. This could involve conversations that include wondering about:

- Q What is mud and how is it formed?
- Q Whether mud changes with our use or through the weathers and seasons?
- Q Is today a good day for mud play?
- Q Does the mud need a rest from us?
- Q Who or what also enjoys playing with mud?
- Q What was the land like before the mud appeared? How do we know?
- Q Is this mud patch in a sensible place?
- Q Do we need to rethink where mud play happens in our outdoor space?

Reflective thoughts

- Do our children have open-ended opportunities to explore mud, on and off-site?
- In what ways do we support children to broaden their experiences. For example, are children able to explore with their feet, to sit in mud, to wallow or to slide if they want to?
- What strategies do we have to help children self-regulate their mud play?
- What assumptions are we making about mud play, based on our own experiences, culture, upbringing and beliefs about childhood?

Too much mud: possible solutions

Mud can be seasonal which means that different action is required at different times of the year. Check with your landowner about a suitable course of action. The time taken for the ground to recover can be substantial. The mud needs prompt attention if:

- It is in a place that could cause disruption or hazard to other users and children, such as at site entrances and on or around pathways and access routes.
- The size or number of mud patches start growing and affecting the range of play opportunities or the feel of a site in a detrimental way.

Mud slides are great fun and physically challenging for many children. Yet the erosion to a slope or even flat ground can be significant, with lots of recovery time needed, even after one session. Check with the landowner first. If children want a sliding experience, encourage them to consider alternatives such as putting a pegged tarp under a water or mud slide.

Temporary solutions to consider

- The use of materials as stepping stones through the mud. Wet wood is slippery so this needs to be taken into account if wooden planks, disks or pallets are used.
- The use of conifer brushings or woodchip. Avoid imported materials to maintain biosecurity in environmentally sensitive sites. If no underlay is used, then regular topping up will be needed.
- The use of temporary, portable pathways that are laid over the ground to enable access by children in wheelchairs or who are less mobile.



Section 6

Embedding care for our outdoor spaces into our experiences

Define the mud patch to avoid expansion

- Use logs, raised beds, biodegradable tape or other boundary markers. Ask your children for advice about where these should go and involve them in creating the visual markers.

Long-term solutions

- Creating alternative habitats: a pond or wetland area in places that are permanently wide, wet and muddy.
- Re-seeding with the correct species mix of grass in the spring or summer months and avoiding using the area until the grass has grown. Where needed, use artificial matting to protect grass.
- Replacing with an alternative surface can enable greater use especially at pressure points such as entrances to sites or shelter or if you have children who are less mobile or rely on aids to move. Have a look at [6.5 Footfall and trampling](#).

Leaving mud behind

- Clean any mud and leaves off footwear to avoid spreading pests and disease before leaving a site.
 - 🗨️ Where's the best place to do this?
 - 🗨️ How much time do we need to give ourselves?
- Develop enjoyable mud removal routines from clothing and footwear, e.g., use of hoses and brushes. Use the grey water created for watering plants as part of the process.
 - 🗨️ What songs do your children like to sing as part of this process?
 - 🗨️ What advice can they give each other about mud removal from their clothes and boots?

🗨️ What's the minimum amount of water we can use?

🗨️ Why do we use only a little water?

- Don't use mud from your local greenspace site to replenish mud supplies in your outdoor space. Buy topsoil from a local firm instead.

🗨️ Does all mud look and feel the same?

🗨️ Why do we need to leave mud where it is?

- Mud clods (dubs) that find their way into drains and streams can have adverse effects on aquatic life and water quality. See [6.14 Inland water margins](#)

Watch wet grass or soft ground

If footprints appear, discuss the impact with your group. You may need to stop using until no trace can be seen which may take days, weeks or months.

🗨️ How will we remember which areas need a rest from us?



Find out more

- Making a Mud Kitchen free booklet: [English version | Mud Kitchen book | Muddy Faces](#)
- International Mud Day is 29th June. Why not invite families to join your group for a shared session? [International Mud Day | Mud | Muddy Faces](#)