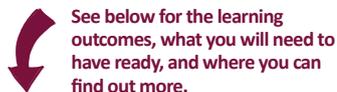


# Introducing a tree

## – let’s build one!



See below for the learning outcomes, what you will need to have ready, and where you can find out more.

### Learners will have/be able to:

- Describe the parts of a tree and their functions.
- Use words and a variety of media to express ideas, observations and feelings
- Build and express a personal relationship, based on firsthand experience, with the natural world
- Assess risk and take informed decisions
- Work cooperatively with partners and in teams, building trust
- Be self-aware, active and achieve a feeling of well-being

### Flat, outdoor space

Preferably close to a tree – or indoor hall

### Sit-upons/plastic bags

If wet

### A slice of a log (optional)

Or nearby stump

### 2.1A Activity script

As a prompt for leader/helpers

### Magnifiers (optional)

1 each – to look at pores/stomata

### *Sharing Nature with Children II*

by Joseph Cornell, Dawn Publications  
(ISBN 978-0-7518-3589-2)

### Forestry Commission Scotland

Tree Trunk online resource  
Free poster *How a Tree Works*  
[www.forestry.gov.uk/scotland](http://www.forestry.gov.uk/scotland)

This is an activity based on **Build a tree** by Joseph Cornell. It aims to familiarise children with the ways trees work, and teach them what is going on in different parts of a tree, and why.

It is hoped the activity will help the children develop a sense of wonder at how nature works, by getting a glimpse into the amazing processes that are going on all the time inside what might normally seem “just another tree.” Trees are the largest life form on the earth and are vital to human survival on this planet.

Cornell emphasises that we need to start with where our learners are “at”; that is, approach the topic through their point of view and then steer – rather than push – them through a sequence of activities to the learning goal.



If you are interested in these ideas read more about them in Joseph Cornell’s book *Sharing Nature with Children II*  
*See Sources and further inspiration*



## Activity 1

This is a game that encourages cooperation and working together, as well as learning a little tree biology. You may use it as a fun way to assess what has been learnt in class, after a day in woodland, or after examining a tree in the school grounds/local park closely. It requires a whole class of children.

Once started you need to keep the momentum and enthusiasm up – if you are not the type, perhaps ask someone very outgoing to help you! You will need to tailor your narrative to match the age, ability and concentration of your players. Other adults/older students can help the players once you have explained the basics.

**01** Explain they are going to create a drama/sketch that builds a tree – mimicking the parts of a tree and what they do. Explain that they are going to be moving about close to each other and should be aware of what others are doing at all times – ask them to think about the potential hazards, and what they can do to avoid risk of hurting themselves/others. Agree a code of behaviour – listen to instructions, move into position only when instructed and carefully. You are going to talk them through what the parts do and how the players should position themselves – they need to listen carefully, we may swap over roles, so they need to know/practice what everyone does.

What key parts of a tree can they remember? Take them back to the centre of the trunk, and start building a tree. The players act out the various parts and processes of a tree – see 2.1A *Introducing a tree - let's build one* on the following page.

- **heartwood** – old solid tubes, providing strength and support for the tree, often hollow – dead but well preserved!
- **tap and lateral roots** – anchoring the tree in the ground and drawing up water and trace minerals/nutrients, stabilising the soil – holding it in place
- **sapwood (xylem)** – carrying water up from the roots to the leaves
- **leaves** – the food factory for the tree, trapping sunlight energy to enable the manufacture of sugars from water, oxygen and carbon dioxide molecules – forming the tree canopy
- **phloem** – carrying food down from the leaves to the rest of the tree and roots
- **cambium** – the growing part of the tree under the bark
- **bark** – outer protection for the tree against disease and damage (browsing)

When the performance is over, collect everyone into a circle and ask them something they enjoyed and/or have learnt from participating in the activity – about themselves and/or about trees and the processes going on. Back indoors hand them out a tree profile and/or project. Draw an image of a tree sliced onto a Smartboard and ask them to fit a list of labels to the parts of the tree.

**02****03**

2.1A

# Introducing a tree activity script

**“OK, we’re going to build our tree, and we’re going to start with the structure that holds it up...the frame and the foundations – listen carefully, I’m looking for volunteers to do this. First of all 2 people, who are tall and strong, to play the heartwood...”**

Do it in your own light-hearted style and try and follow the points below as you build up the tree... have fun doing it!

## Heartwood

2 players

Demonstrate how they should stand tall, arms at their sides with their backs together. The heartwood is the inner core of all old trees. Its job is to keep the tree upright even in storms. It is dead now, all its tubes are clogged with resin, but they used to carry water and food up and down the tree – point to the area of your log slice (optional). Ask the heartwood players to repeat their lines – “Stand tall and strong”.

## Tap & lateral roots

5–6 players

Volunteers lie or sit on the ground. Ask 3 to sit with their backs towards the heartwood, leaving a space, and their legs sticking out in front (taproot – not all trees have them). The rest form a circle facing inwards and put their legs between the taproots and lie back facing upwards (lateral roots) – arms/fingers outspread. Relate to everyone that there is a taproot, and/or hundreds of roots stretching down through the soil to support the tree, but remind them that at their tips they have tiny root hairs, to absorb water from the soil. These hairs have very tough cells to push through the soil. Ask the root players to practice their lines – the instruction is “roots slurp” – demonstrate/ encourage a slurping noise – then let’s hear them slurp – everyone can be encouraged to do this!

## Sapwood

4 players

They need to form a complete circle around the heartwood, standing in the space between the roots and the heartwood – facing inwards and holding hands/wrists. Ask/tell them what the job of the sapwood/xylem is – it is the most efficient water pump in the world, with no moving parts. These tubes bring thousands of litres of water from the roots to the leaves every day at speeds of over 100mph. Ask them to practice their role – listen for the instruction “bring the water up” after the roots have sucked up the water. Demonstrate the action – “whreeeee” – in an upward scale, and throw your arms up. Again everyone else can join in the practice too.



## Take a break...

Ask everyone to stand up and shake themselves about, then to concentrate on the leaves of a tree – what do they do? Explain that the leaves are the food factory of a tree. Ask them to look at their hands, what happens when they get hot? They get sweaty. What is happening? Sweat is released from pores. Can they see the pores in their skin? Hardly – if you have magnifiers, they could look again? The same with most leaves they have them but you don't see them – they are called stomata. Draw a similar analogy with blood and veins – look at their hands – leaves also have veins transporting water and food. We will look at the way leaves make food later – just for now know it happens, and water vapour is released and gases are exchanged through the surface of leaves. Back to our tree trunk...



## Cambium/phloem

6 players

A complex role – form a circle around the sapwood circle, also facing outward and holding hands/wrists – explain that on the inside of this circle is the cambium layer, the growing part of the tree. Every year it adds a layer – what we see as a tree ring when a tree is cut down (show log slice). Behind you towards the outside of the tree is the phloem. This is a layer of tubes carrying food down from the leaves to the roots and the rest of the tree. Ask them to practice their role – give the instruction “let's make food” – make sure there is enough space to ensure arms don't hit noses when raised – ask them to raise their arms and cross their wrists and make their hands into leaves by shaking them – this is the tree canopy.

Ask them to practice taking the food from the leaves to the rest of the tree: Listen for “bring the food down” – then you demonstrate a “zooooo” – on a descending scale, and as you do it, bend your knees and bring down your arms. Let them and those left practice.

At this stage rehearse the full performance – go through all the sounds and motions in order – “stand tall and strong” – “let's slurp” – “let's make food” – “bring the water up” – “bring the food down”. Repeat to ensure they get the idea to make food before bringing the water up. What's missing?



## Bark

All remaining players are the bark, and you may have briefed another adult to be an attacking insect (or play this yourself). They make a ring around the inner rings, but facing outwards, holding hands, avoiding standing on the roots! Ask everyone what the bark does – protects the tree from dangers – such as people with knives, boring insects, infection, fire, deer and hare. Show them how to stand – elbows out and fists into their chests.



## Full performance

Are they ready? Call out the instructions in sequence, and then on cue ask the boring insect to attack around the tree – play it up by scowling, using hands as antennae, back and forth. Be watchful of those lying on the ground. There should be some laughter and enjoyment, before calling a stop.

