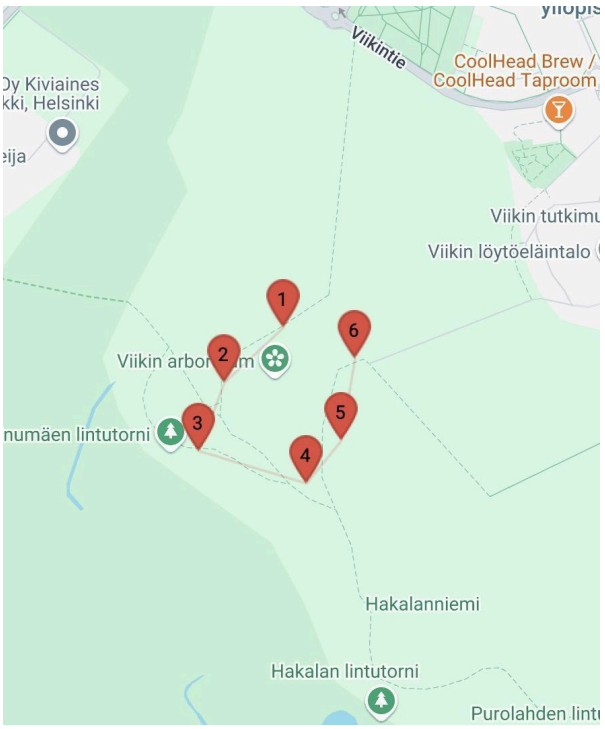
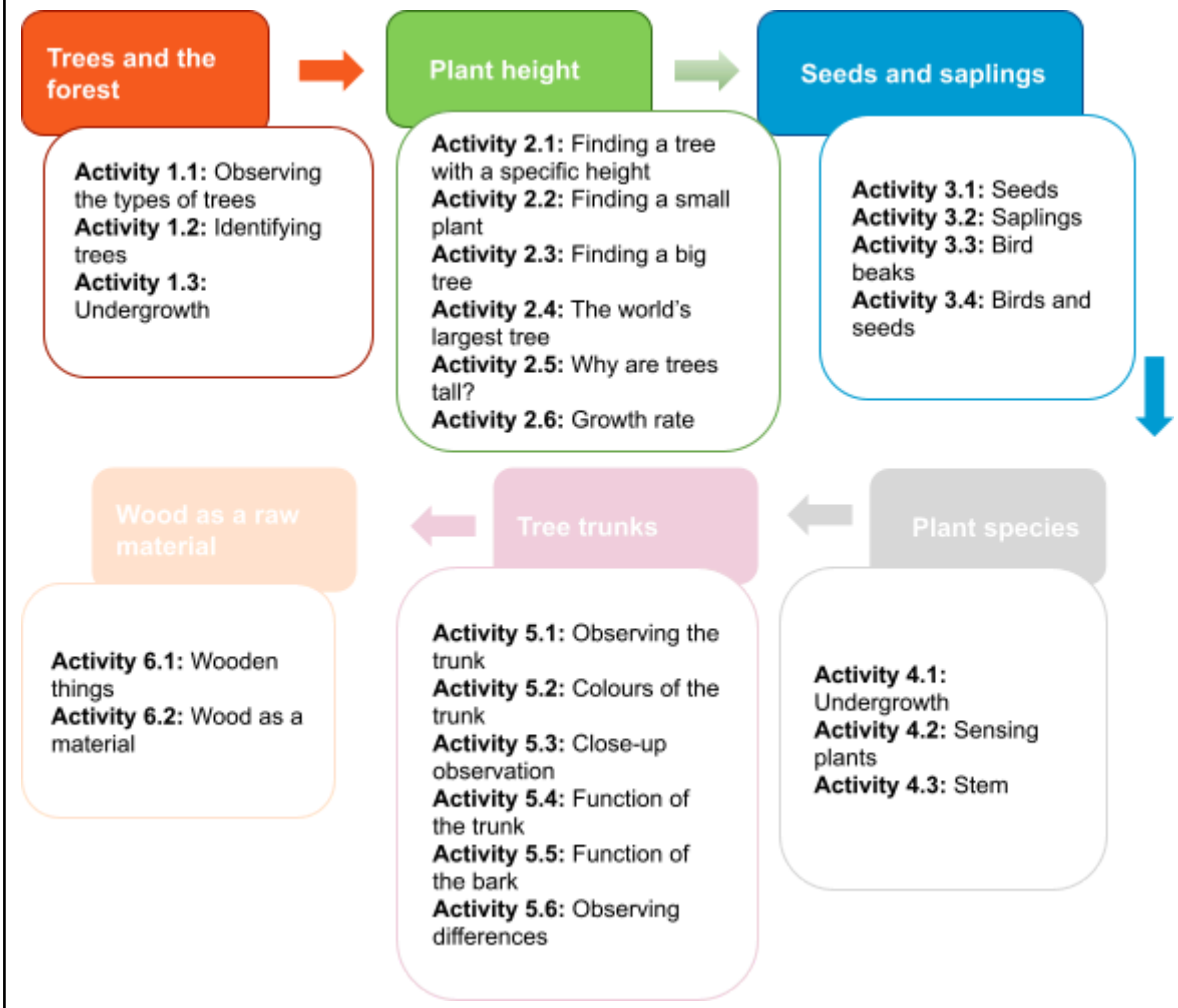
EXAMPLE TRAIL Finland 1: Forest

Name of the trail:	Biodiversity in the forest
How to find it on Avastusrada:	https://kool.avastusrada.ee/admin/map/biodiversity-in-the-forest
Screenshot:	
Developer:	Anttoni Kervinen, Arja Kaasinen, Laura Korpela, Tarja Lahtinen, Ulla Laitinen, Sari Saukkonen, Topi Turunen
Addressed age group:	Grades 3–6
Addressed dimensions of biodiversity:	Focus on observing trees and other plants in the forest and their interactions with animals and humans
Relevant topics:	Biodiversity of the forest
General overview and aim:	The aim of the trail is for the students to 1) make detailed observations of the environment 2) practice skills needed to distinguish between different types of forest 3) learn about tree growth and reproduction 4) engage in thinking of wood as a raw material

Framework conditions:	Time: about 1 hour Equipment required: Mobile phones or tablets with internet access for all participants No essential prior knowledge is expected. The participants will be divided into groups of two to four people. Motivating framework (narrative, context): A framework story of an owl can be used as motivation. In the trail, the owl will ask for help from the students to complete the tasks. 
Flowchart	



Modules of the trail	
Content 1 – Trees and forest	
Activity 1.1 – Observing the types of trees	
Site conditions/information	A location with different tree species (deciduous trees or coniferous trees).
Duration	1 minute
Description of the activity	Assess whether there are more deciduous trees or coniferous trees in the forest. Free text
Content 1 – Trees and forest	

Activity 1.2 – Identifying trees	
Site conditions/information	A location with different tree species (deciduous trees or coniferous trees).
Duration	3 minutes
Description of the activity	What different types of trees can you identify? Free text
Content 1 – Trees and forest	
Activity 1.3 – Undergrowth	
Site conditions/information	A location with different tree species (deciduous trees or coniferous trees).
Duration	2 minutes
Description of the activity	What kind of undergrowth grows in the forest? Multiple-choice question (one or several answers can be correct) 1) shrub layer (e.g. blueberries, lingonberries, heather) 2) mosses and lichens 3) ferns and/or horsetails 4) spring bloomers (e.g. wood anemone and hepatica)
Content 2 – Plant height	
Activity 2.1 – Finding a tree with a specific height	
Site conditions/information	Introduction by the owl: Great! You have been a lot of help to me. I wonder if you could next help me to understand how trees grow so tall. I really appreciate that feature of the trees because I like to look at the forest from the heights! A location with different-sized trees

Duration	10 minutes
Description of the activity	Find a plant that is your height. Take a picture of the plant. Photo answer
Content 2 – Plant height	
Activity 2.2 – Finding a small plant	
Site conditions/information	A location with different-sized trees
Duration	2 minutes
Description of the activity	What is the smallest plant you can find? Take a picture. Photo answer
Content 2 – Plant height	
Activity 2.3 – Finding a big tree	
Site conditions/information	A location with different-sized trees
Duration	2 minutes
Description of the activity	What about the biggest plant? Take a picture. Photo answer
Content 2 – Plant height	
Activity 2.4 – The world's largest tree	
Site conditions/information	Any location
Duration	2 minutes

Description of the activity	How tall is the tallest tree in the world? Multiple-choice question (one correct answer) 1) 52 metres 2) 84 metres 3) 115 metres (correct) 4) 304 metres Explanation: The tallest tree in the world is the giant redwood (*Sequoia sempervirens*) in California. Known as Hyperion, the tree is 115.56 meters tall, according to one measurement. The largest tree in the world by volume is the sequoia, also in California. It is 84 metres tall, but has a thicker trunk than the Hyperion.
Content 2 – Plant height	
Activity 2.5 – Why are trees tall?	
Site conditions/information	A location with different-sized trees
Duration	2 minutes
Description of the activity	Why do trees grow so tall compared to lower plants? Multiple-choice question (one correct answer) 1) They compete for light by growing their leaves as high as possible (correct) 2) To provide as much living space as possible for animals nesting in trees 3) Because they get so much food from the soil with their large roots Explanation: Plants use sunlight as their source of energy (like humans use food). This is why they have to maximise the amount of light they can get and usually grow as high as needed.
Content 2 – Plant height	
Activity 2.6 – Growth rate	

Site conditions/information	A location with different-sized trees
Duration	2 minutes
Description of the activity	In Finland, pine trees mainly grow tall in June. How fast are pines currently growing in southern and central Finland? Multiple-choice question (one correct answer) 1) 1–2 cm per day (correct) 2) 1–2 cm per week 3) 1–2 cm per month Explanation: On average, the height increment period lasts about one and a half months, with the peak growth rate in June being influenced by favourable temperature and precipitation conditions.
Content 3 – Seeds and saplings	
Activity 3.1 – Seeds	
Site conditions/information	A site with different tree seeds to be found or seen Introduction by the owl: Great! You have been a lot of help to me. Could you next help me understand how trees really grow and where they originate from? Next, you will need precise vision like I have.
Duration	2 minutes
Description of the activity	Look around you for plant seeds. Take a picture of one of the seeds you found. Photo answer
Content 3 – Seeds and saplings	
Activity 3.2 – Saplings	

Site conditions/information	A site with different tree seeds to be found or seen
Duration	2 minutes
Description of the activity	Look around you for tree saplings. Take a picture of one sapling. Photo answer
Content 3 – Seeds and saplings	
Activity 3.3 – Bird beaks	
Site conditions/information	A site with different tree seeds to be found or seen
Duration	5 minutes
Description of the activity	Next, you will see pictures of birds' beaks. Think about what kind of food the birds eat. What kind of food does this bird eat? Free text Pictures 
Content 3 – Seeds and saplings	
Activity 3.4 – Birds and seeds	
Site conditions/information	A site with different tree seeds to be found or seen
Duration	10 minutes
Description of the activity	What is the significance of birds for plant seeds? Free text
Content 4 – Plant species	
Activity 4.1 Undergrowth	
Site conditions/information	A site with different plant species

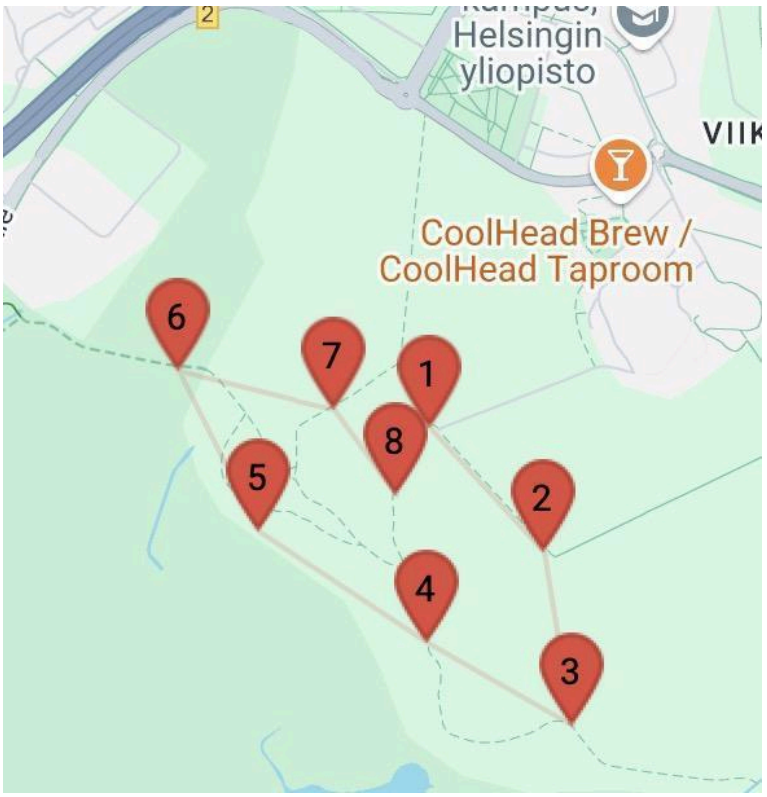
	Introduction by the owl: I usually spend my time in the upper parts of the forest on tree branches, except when I am fishing. Could you explore some of the lower forest vegetation for me?
Duration	1 minute
Description of the activity	Take a picture of one of the undergrowth plants in the forest. Photo answer
Content 4 – Plant species	
Activity 4.2 – Sensing plants	
Site conditions/information	A site with different plant species
Duration	2 minutes
Description of the activity	Feel the leaf of the plant. How does it feel (e.g. soft, fluffy, waxy)? Free text
Content 4 – Plant species	
Activity 4.3 – Stem	
Site conditions/information	A site with different plant species
Duration	1 minutes
Description of the activity	What kind of stem does the plant have? Free text
Content 5 – Tree trunks	
Activity 5.1 – Observing the trunk	
Site conditions/information	A site with different trees Introduction by the owl: Thanks for your help! Let's get back to the trees again. Us owls do not have hands and arms, so I need your help again!
Duration	3 minute

Description of the activity	Choose one tree. Feel the trunk of the tree. Describe the surface of the trunk using two adjectives. Free text
Content 5 – Tree trunks	
Activity 5.2 – Colours of the trunk	
Site conditions/information	A site with different trees
Duration	2 minute
Description of the activity	How many colours can you find on a tree trunk? Free text
Content 5 – Tree trunks	
Activity 5.3 – Close-up observation	
Site conditions/information	A site with different trees
Duration	2 minute
Description of the activity	Find the most interesting detail in the frame. Take a close-up photo of it. Photo answer
Content 5 – Tree trunks	
Activity 5.4 – Function of the trunk	
Site conditions/information	A site with different trees
Duration	1 minute
Description of the activity	What are the functions of a tree trunk? Free text
Content 5 – Tree trunks	
Activity 5.5 – Function of the bark	
Site conditions/information	A site with different trees

Duration	1 minute
Description of the activity	What are the functions of tree bark? Free text
Content 5 – Tree trunks	
Activity 5.6 – Observing differences	
Site conditions/information	A site with different trees
Duration	2 minute
Description of the activity	Find another tree with a trunk different from the first tree. How do the trunks differ? Free text
Content 6 – Wood as a raw material	
Activity 6.1 – Wooden things	
Site conditions/information	A site with different trees Introduction by the owl: As you have probably realized, insects, birds, and for example squirrels benefit greatly from trees, and trees also from them. I have heard that humans have also taken a liking to trees, even though they do not nest in them. Can you help me understand how you humans really utilise trees?
Duration	3 minute
Description of the activity	Come up with something new that could be made out of wood. Free text
Content 6 – Wood as a raw material	
Activity 6.2 Wood as a material	
Site conditions/information	A site with different trees
Duration	2 minute
Description of the activity	Consider what good and bad aspects there are in using wood as a raw material. Please write.

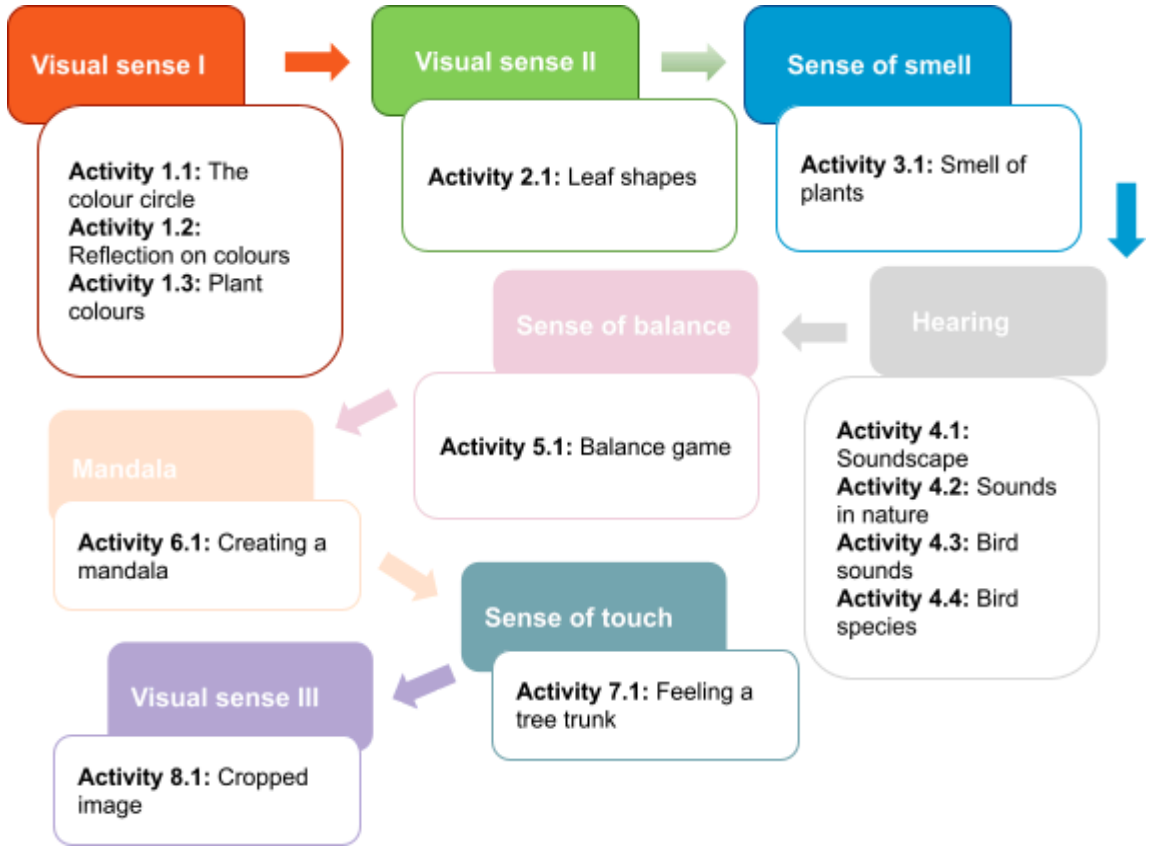
	Free text

EXAMPLE TRAIL Finland 2: Different senses

Name of the trail:	**Using different senses in the forest**
How to find it on Avastusrada:	https://kool.avastusrada.ee/admin/map/using-different-senses-in-the-forest
Screenshot:	
Developer:	Anttoni Kervinen, Arja Kaasinen, Laura Korpela, Tarja Lahtinen, Ulla Laitinen, Sari Saukkonen, Topi Turunen
Addressed age group:	Grades 3–6
Addressed dimensions of biodiversity:	Focus on observing trees and other plants in the forest and their interactions with animals and humans
Relevant topics:	Biodiversity of the forest, observational skills, arts
General overview and aim:	The aim of the trail is for the students to 1) use different senses to observe and engage with the environment 2) practice arts skills in nature 3) connect with natural environment in diverse ways

Framework conditions:	Time: about 1 hour Equipment required: Mobile phones or tablets with internet access for all participants, a printed and laminated colour circle (optional) No essential prior knowledge is expected. The participants will be divided into groups of two to four people.

Flowchart



Modules of the trail

Content 1 – Visual sense I

Activity 1.1 – The colour circle	
Site conditions/information	Location with different vegetation and understorey plants
Duration	8 minutes
Description of the activity	Look for different-coloured things in the environment. Can you find every colour in the colour wheel? Assemble the things you find into a colour circle on the ground and take a picture. Photo answer
Content 1 – Visual sense I	
Activity 1.2 – Reflection on colours	
Site conditions/information	Location with different vegetation and understorey plants
Duration	2 minutes
Description of the activity	What are the most common colours in the environment? Why? Free text
Content 1 – Visual sense I	
Activity 1.3 – Plant colours	
Site conditions/information	Location with different vegetation and understorey plants
Duration	2 minutes
Description of the activity	Why are plants mostly green? Multiple-choice question (one correct answer) 1) Plants absorb green light and reflect other colours. 2) Chlorophyll, the pigment in plant cells, absorbs blue and red light and reflects green light. (correct)

	3) Plants have a high concentration of water in their tissues, which gives them a green hue. Explanation: Plants are mostly green because chlorophyll, the pigment in their cells, absorbs blue and red light for photosynthesis and reflects green light, making the plants appear green to our eyes.
Content 2 – Visual sense II	
Activity 2.1 – Leaf shapes	
Site conditions/information	A location with understorey vegetation
Duration	5 minutes
Description of the activity	Use a stick to make a square on the ground (for example 1 m × 1 m). Count how many different shapes of plant leaves you can find. Take pictures of the different leaf shapes. Photo answer
Content 3 – Sense of smell	
Activity 3.1 – Smell of plants	
Site conditions/information	A site with different vegetation
Duration	4 minutes
Description of the activity	Take the plant parts in your hand and rub them between your fingers. How would you describe the scents of the different plants? Write down different words. Free text
Content 4 – Hearing	

Activity 4.1 – Soundscape	
Site conditions/information	Any site with (nature) sounds
Duration	5 minutes
Description of the activity	Draw the surrounding soundscape on the ground with a stick, or paint the soundscape with water and a brush on the stone surface. Take a picture. Photo answer
Content 4 – Hearing	
Activity 4.2 – Sounds in nature	
Site conditions/information	Any site, preferably with trees, sticks, and rocks around
Duration	5 minutes
Description of the activity	In small groups, make rhythms with either body parts or natural materials, so that everyone's rhythm is different. Combine the rhythms. Present to others and take a photo of the performance. Photo answer
Content 4 – Hearing	
Activity 4.3 – Bird sounds	
Site conditions/information	A site with birds around
Duration	3 minutes
Description of the activity	What different bird sounds can you hear? Count all the different types of bird sounds. Free text
Content 4 – Hearing	
Activity 4.4 – Bird species	
Site conditions/information	A site with birds around

Duration	5 minutes
Description of the activity	How many different species did you identify? Was one dominant? You can use Bird NET or other apps. Free text
Content 5 – Sense of balance	
Activity 5.1 – Balance game	
Site conditions/information	A site with vegetation, rocks, and different surfaces
Duration	5 minutes
Description of the activity	Practice combining your sense of balance and your sense of sight. Agree on an area to move around in. Just walk along tree roots, stumps, stones, or tracks you have drawn on the ground. If you fall on the ground, you sink into the swamp and are out of the game. Take a photo of the playground. Photo answer
Content 6 – Mandala	
Activity 6.1 – Creating a mandala	
Site conditions/information	A site with vegetation (dead or alive) and natural objects that can be collected
Duration	5 minutes
Description of the activity	Making a nature mandala. Make a nature mandala from plant parts and stones that have fallen to the ground. Take a picture.
Content 7 – Sense of touch	
Activity 7.1 – Feeling a tree trunk	
Site conditions/information	A site with different trees
Duration	5 minutes
Description of the activity	This exercise is done in pairs. Close your eyes. Your partner will take you to a tree. Feel the tree, hug it and smell it. Can your arms reach around the tree? Is the surface smooth, rough,

	knotty, coarse…? Describe it. Then, your partner will take you back. Open your eyes. Try to recognise the tree that you just hugged. Take a picture. Photo answer
Content 8 – Visual sense III	
Activity 8.1 – Cropped image	
Site conditions/information	A site with sticks around
Duration	3 minutes
Description of the activity	Find three sticks. Place them in your hand so that a small triangular window forams between the sticks. Look at your surroundings through the window. Choose an interesting view. Use your phone to take a picture of your chosen view through the window formed by the sticks. Photo answer