A MANUAL ON OUTDOOR EDUCATION

FROM THE ECOLITERACY PROGRAM OF DROEVENDAAL FOOD FOREST

ACKNOWLEDGEMENTS

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I also want to acknowledge the debt I owe to the educators from Voedselbos Vlaardingen who shared their work and educational experiences with me and the whole team of the Food Forest Droevendaal.
Dafni Petratou 10/2/2023

The content, design, illustrations and editing of this manual was done by Dafni Petratou, an intern in the Food Forest Wageningen, a project of "Stichting ReGeneratie" for the period of October 2022-February 2023.

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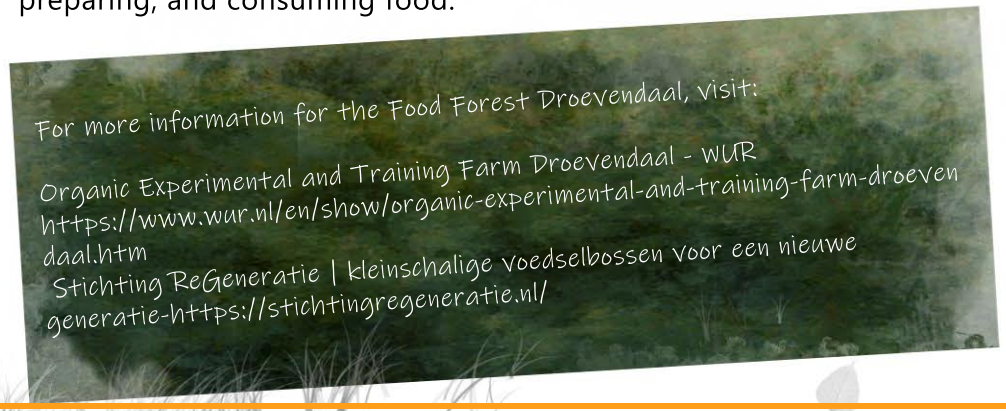
INTRODUCTION: THE ECOLITERACY PROGRAM

This manual has been developed during the Fall and Winter of 2022, and its objective is to provide ideas of how to organize and how to get the most out of activities that aim to plant the seeds for loving and understanding the natural world.
The activities are designed to fit the context of the "Ecoliteracy program" of the Food Forest Droevendal, in Wageningen. Therefore, some of the handbook's content serves as a source of tips and guidelines for future facilitators in this program. However, the creators of the handbook hope that their work will be disseminated freely, and serve other educational initiatives anywhere in the world.

THE SITE

The Droevendaal Food Forest is located within the grounds of the experimental farms of Wageningen University in the Netherlands. It used to be a fruit orchard with numerous apple trees, which are still a prominent feature of the food forest. Now, the food forest contains many diverse features, for example: two ponds, a ditch, a soil mound, nut trees and berry bushes, hedges, and a central space to gather and cook or eat together.
The food forest is an ideal learning space since it combines features of agriculture and wilderness. In its grounds one can meet different kinds of beings, hide, run, rest, and convene. There is also a potential for the learners to explore different aspects and ways of growing, harvesting, preparing, and consuming food.



WHAT IS THE ECOLITERACY PROGRAM

The Ecoliteracy program has been developing in the Droevendaal food forest since 2018. Every year, children from a nearby primary school visit the food forest. The program aims to provide the children with tailor-made lessons that build upon each other, which are referred to as sessions. The sessions are on a weekly basis, and are divided into two seasons: 10 sessions in autumn and 10 in spring. Their duration is overall 2 hours, 30 minutes of which are dedicated to lunch and free play in the grounds of the food forest*.

The facilitators are mostly volunteering students of Wageningen University. Some students are facilitating as part of their internship or thesis projects. The organizing team of students is not the same for every season. Therefore, the program is highly dynamic. Through online documentation and through the help of team members who have been active in the program in previous seasons, experiences are shared between the teams of consecutive seasons.

* This information is valid until the season of Fall 2022. Changes may happen in the following seasons.

Left: session in Spring 2019
Right: session in Autumn 2019

THE THEORY OF ECOLITERACY: THE 4 H'S

What deeply motivates us as educators to focus on nurturing Ecoliteracy is the unprecedented difficulties of our times. We are in deep need to foster education that will prepare people for the complex ecological and political challenges that are lying ahead. **But what does "Ecoliteracy" mean for us?** And how could the activities described in this handbook develop "Ecoliteracy"? That's what is illustrated in the following paragraphs.

HOLISTIC ENGAGEMENT: EYES, HANDS, HEAD, HEART, HARA

According to McBride et al. (2013) the terms "environmental literacy", "ecological literacy", and "Ecoliteracy" have been given various definitions throughout the years. In their article, McBride and his colleagues make the effort to explicitly define and compare these terms based on theoretical frameworks.

One of their conclusions is that all these frameworks for education include nurturing "knowledge, cognitive skills, and behavioral components". Ecoliteracy differs from the rest because it has a clearer emphasis on the holistic engagement of the learners' skills, senses, emotions, and "spirit".

The need to actively engage these human components towards participatory action and sustainable living are expressed in the earliest writings on Ecoliteracy (Capra, 1997, 2022; Orr, 1992). In those writings, it is said that Ecoliteracy needs to connect the "disparate parts of the personality: intellect, hands, and heart and spirit". The meaning of these parts are summarized below (Capra, 1997, 2022, as cited in McBride et al., 2013):

1. Head/ cognitive: Approach issues from a systems perspective, understand fundamental ecological principles, (..) think critically, assess impacts and ethical effects of human actions, envision long-term consequences of decisions.
2. Heart/emotional: feel concern, empathy and respect for other people and living things, appreciate multiple perspectives, commit to equity and justice for all.
3. Hands/active: create and use tools and procedures required by sustainable communities, turn convictions into practical and effective action, assess and adjust uses of energy and resources.
4. Spirit/connectional: experience wonder and awe toward nature, feel reverence for the Earth and all living things, (...) feel kinship with the natural world"

Not all educators and researchers add the "spiritual dimension" to their framework. However, according to a previous study conducted to the Droevendaal Food Forest (Grimm, 2021), this dimension is thought as essential by the organizers of the Ecoliteracy program. Grimm (2021) referred to it as "hara", borrowing the term from Japanese tradition. It represents the sense of connection of ourselves with other beings. So, another the previous list has transformed as the 4H's: Head, Heart, Hands and Hara.

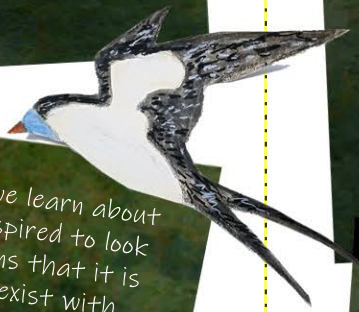
THE THEORY OF ECOLITERACY: THE 5 PILLARS

PILLARS OF ECOLITERACY

Goleman and his colleagues wrote a book in 2012 called "Ecoliterate: how educators are cultivating emotional, social, and ecological intelligence". In this book five main principles of Ecoliteracy are defined. They are presented as "pillars" for Ecoliteracy education, and they have served as a valuable source of theoretical inspiration for our educational initiative. Those pillars are presented below, explained with my own words:

1. Develop empathy for all forms of life: This pillar relates to shifting our anthropocentric perspectives and recognize the needs of other living organisms. It means to feel intrinsically interested about their wellbeing and genuinely curious about their functions and perspectives. Teachers can help in developing empathy for other forms of life by studying worldviews and common practices from indigenous cultures. An example for an activity that fosters the development of these abilities is the "Council of All Beings".

2. Embrace sustainability as a community practice: When we learn about the interconnectedness of the natural world, we are also inspired to look for interconnectedness in our human groups. This pillar means that it is central in Ecoliteracy to cultivate the need and ability to co-exist with others in what we call a "community". To understand that communities are determining our ability to survive and thrive. To thrive means to care about the present and the future and to use the resources thoughtfully. **In other words, to live sustainably.**
Primary school children can be inspired to think of themselves as a member of their school community. They can examine how sustainability is important in the context of this community, for example by investigating how their school manages its inputs (e.g. energy or school food as described in Food and Sustainability | ecoliteracy.org.-https://www.ecoliteracy.org/food-and-sustainability) and outputs (e.g. food, plastic, sanitary waste etc.).



3. Make the invisible visible. Our consumerist societies are functioning through global economies that alienate us from the environmental and social consequences of human activities. It is difficult for us to imagine how our everyday lives are linked to practices that are yielding grave consequences for the wellbeing of living things thousands of kilometers away from us. It is even more difficult to realize the level in which human societies have impacted the stability of our planet's climate. Our **way of living has built walls that shield us from experiencing what our** actions mean for the rest of the world as individuals and societies. The aim of Ecoliteracy educators is to make these consequences visible. That can be done through a number of practices. One example mentioned in the book by Goleman and his colleagues include the use of web-based tools that allow students to travel virtually around our planet.

4. Anticipate unintended consequences: Human practices have consequences that cannot be foreseen, even by experts. It is difficult for existing knowledge to help us imagine the potential impacts of new technologies or practices. But how can the education proposed in this handbook bring a change in how people grasp the complexity of our decisions and foresee possible implications? One strategy is to introduce students to a system's thinking perspective. This means that when looking at an issue, we are **not breaking it down to isolated components. System's thinking entails to** map all components and their interconnections.

5. Understand how nature sustains life: System thinking is an essential part of Ecoliteracy education and is applicable in understanding how all things depend on their interconnectedness for survival. Educators of Ecoliteracy aim to foster the understanding of the diverse web of relationships within a location by having students study that location as a system. Another objective is to make learners more aware that systems exist on various scales. In nature, organisms are members of systems **nested within other systems. For example, when children are learning** about kinds of plants and animals present in an ecosystem, it is good to shift their attention towards their relation to other beings or things. That can be done by asking questions, playing games (see "web of Life) etc.

TIPS FOR EDUCATORS: THE SESSION

SESSION STRUCTURE

The first 30 minutes after the children arrive are dedicated to eating lunch and/or playing freely in the food forest. This is a chance for the facilitators to feel the energies of the children and to connect on an equal level. After that, the children and facilitators convene. The coordinator of the session starts a reflective question session about the topics addressed in the previous session. After that the coordinator introduces the topic that is going to be addressed that day and explains the planned activities.

There are multiple ways to structure a session. Usually, it is composed of three or four separate "structured activities",interrupted by "guided play". The children are usually divided in groups. Those groups may or may not rotate from one activity to another.

STRUCTURED ACTIVITIES: these activities are planned beforehand by the facilitators, and their flow can be divided into three parts, as explained in the book "Earth Care, People Care and Fair Share in Education" (Lusie Anderslowe et al., 2018), namely:

1. SOWING: the stage in which the educator plants the seed of inspiration, curiosity and motivation that is required for the journey and nourishes it. This is very important stage for the engagement of the learners. It can take the form of open-ended questions, storytelling, a quiz, walk in the forest etc.

2. GROWING: in this stage, the educator is helping the learners to go through the process of learning, allowing the seed to grow in various unexpected ways.

3 HARVESTING: when the "learning is consolidated through celebration and joy". This can take many forms, for example the learners can share what they have learned, what they want to learn in the future, give feedback etc.

GUIDED PLAY: "guided play" includes activities that are fun, flexible, and have no clear structure or goal. These activities can be used as "energizers" to retain the attention of the learners, or as activities that will reduce the energy levels of the learners so they can reflect or participate in other activities.

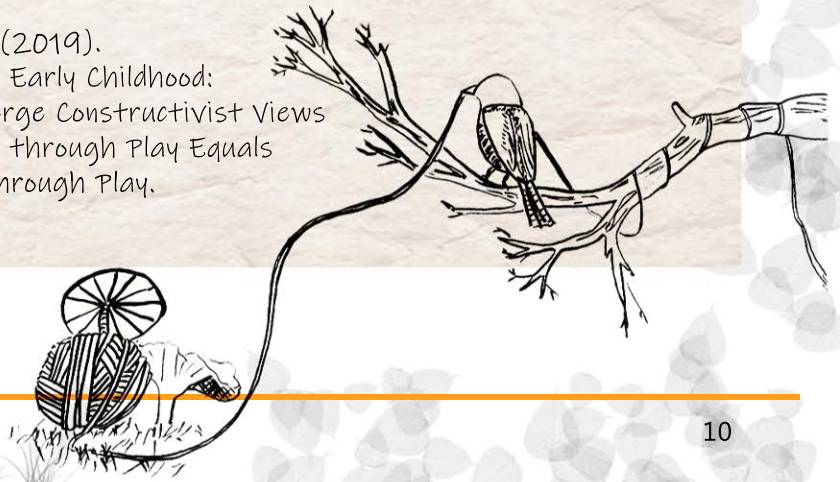
BOOKS AND ARTICLES ON THE THEORY OF EDUCATION FLOW THE ROLE OF PLAY IN EARLY EDUCATION:

Worldwatch Institute, T. (2017). EarthEd: Rethinking Education on a Changing Planet. EarthEd

Csikszentmihalyi, M. (1997). Flow and Education. NAMTA Journal, 22(2), 2-35.

Hyvönen, P. T. (2011). Play in the school context? The perspectives of Finnish teachers. Australian Journal of Teacher Education; v.36 n.8 p.65-83; 2011, 36(8), 65-83.

Hedges, H. (2019). Teaching in Early Childhood: Time to Merge Constructivist Views so Learning through Play Equals Teaching through Play.



TIPS FOR EDUCATORS: GIFTED STUDENTS

HOW TO RECOGNIZE AND HOW TO SUPPORT GIFTED STUDENTS

The students that have been participating in the Ecoliteracy program of the Droevendaal Food Forest have been identified as "gifted". Many children and adults have characteristics of a gifted student without an official statement. It is important that facilitators know how to spot these characteristics and use them to enhance the learning process. These characteristics include:

- Power of critical thinking, skepticism and self-criticism.
- Tendency towards understanding the big picture and preference to top-down thinking (whole-to-part instead of part-to-whole).
- Ability to comprehend material several grade levels above their age peers.
- Rapid comprehension: working in a different pace than most of their peers-going far ahead or pausing to dive deeply in an area of interest.
- An appreciation for nuance and a need for precision in thinking and expression
- A tendency to hold themselves and others to high standards, which can sometimes present as perfectionism
- Idealism and sense of justice- self-aware, socially aware, and aware of global issues
- Spontaneity and eagerness- enthusiastic about unique interests and topics
- Interest in problem solving and applying learned concepts
- Aesthetic and moral commitment to self-selected work
- Volatile temper, especially related to perceptions of failure

When a facilitator recognizes these characteristics it is important to provide the support so the educational program will meet the abilities and needs of the student. Examples of the actions and attitudes that are very helpful in this context include:

- Letting the students explore their passions and organize their learning process (part of what is called self-directed learning).
- Embracing creative questioning, and enjoying the process of searching for answers in unexpected ways; facilitators also learn from students.
- Maintaining a good connection with teachers and parents who are experienced with the needs and wishes of individual children and are probably more than willing to offer advice.
- Letting go of ides of what "normal" is for an age group; you can challenge students by asking questions that require critical or complex thinking that seems too advanced.

SOURCES:

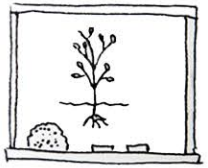
Resources for Educators | National Association for Gifted Children- https://nagc.org/resources-publications/resources-educators

Gifted Education: Options for Gifted Students | Davidson Institute.- https://www.davidsongifted.org/prospective-families/gifted-education-and-support-options/

POTENTIAL OBSTACLES AND HOW TO OVERCOME THEM

Learning outdoors is affected by many factors. For example fear about health and safety, teacher's lack of confidence, shortage of time and support etc. (Rickinson et al., 2004).
Those factors also affect the Ecoliteracy programme. Due to the nature of the learning activities in this programme, some challenges are intrinsic to the curicullum and affecting the flow and goals of the programme, so they deserve to be highlighted. If we face them in an appropriate way, those challenges can become very fruitful for everyone involved. Here are three main obstacles faced by Ecoliteracy educators:

Bad weather conditions: as Frances Krusekopf says in her talk on Nature Kindergardens: "Send the kids outside rain or shine! Have you ever noticed that it is usually adults and not children, that don't want to go outside in bad weather?" (Nature Kindergarten | Frances Krusekopf | TEDxVictoria - YouTube). The weather can, however, often challenge the smooth course of outdoor lessons. We suggest that there is good communication with teachers, extra waterproof clothing at class locations and most importantly: places that provide shelter against weather conditions. This could be a garden shed, or a shed as part of the design of the "main hub" where the participants convene.



Direction for more "theoretical knowledge": often students, parents and teachers will expect that the lessons will include more knowledge sharing about different topics. The answers for that can be:

1. More knowledge! Co-organize the sessions with the teachers. Math, chemistry, language and many more disciplines can be taught through activities in a natural environment: bee hives teach the importance of hexagons (Nazzi, 2016) birds fly using sun, stars and the earth's magnetic field (Thorup et al., 2010) and understanding the soil goes hand in hand with chemistry and physics.

Moreover, it has been proven that children not only learn, but develop different forms of intelligence through outdoor learning (Amaluddin et al., 2019; Fran Martin and Fatima Pirbhai-Illich, 2017; Hallam et al., 2021) . It is important that the learners link what they learn during school with their activities in the food forest. A way to reach this goal is to actively prepare students for each session in the classroom, or link the content of the session with their homework etc.

2. Approach the parents and teachers, and share with them the educational approaches we use. It is important to stress that nowadays a lot of information is very accessible to technologically literate people. What we need is not to give answers, but to inspire curiosity and interest. To be on the same page as all the participants of the program, the principles of education must be made clear and always open for change through discussions.

Loss of concentration and excitement from the learners: It is normal that learners, especially young children, often lose interest in activities that seem exciting to the educators. There are many methods to tackle this issue:
It is important that the activities are variable and alternate often. There should always be space and time for free play or guided play that engages the body and revives an interest in an activity that requires more attention. Another important thing to realize is that the children will have different interests and skills. The facilitators should therefore be flexible when adapting their ideas during the class. It is also important to have a variety of activities prepared for the learners to decide which they would like to participate in. For example, not everyone should do gardening. Some can paint, play theatrical games, or build homes for animals.
Besides flexibility, the facilitators should be able to understand the feedback from the learners and be able to base the lessons on this feedback.

To achieve this, it is useful for all the participants to practice often what is called "deep listening". It can be practiced via various techniques; these can take the forms of rituals described in Brearley, (2015). Examples of methods that are used to enhance this ability is meditation and the use of a talking piece (see Council of All Beings).

TIPS FOR EDUCATORS: PLANNING THE SESSIONS

WHAT TO ASK OURSELVES

The following list has derived from the experience of some of the Program's facilitators, and it has been enriched by literature (Lusie Anderslowe et al., 2018; Nuttall et al., 2013). It is a useful as a checklist that accompanies different stages of session planning. It helps to direct the educators towards the principles and goals of Ecoliteracy education.

- What are the things we want to convey to the learners?
- How do the activities address the learners' expressed interests?
- Is the session engaging the learners' in a holistic way, according to the principles of ecoliteracy (eyes, head, hands, heart, hara)?
- Are the structured activities planned according to the flow of sowing, growing, harvesting?
- Is there enough time for all the parts of the activities?
- Are the materials available? How are the materials local, recycled, organic, compostable, reused/reusable?
- Are the reflective questions open-ended? Are their answers deeply heard (see deep listening)?
- How do the lessons address the pillars of Ecoliteracy?
- Are the activities appropriate for the age of the learners?
- How are the participants guided towards taking responsibility towards the environment of the food forest, and leaving a minimum impact on it?
- How can we make sure that everyone has equal opportunities to participate and express themselves?

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IDEAS FOR ECOLITERACY ACTIVITIES

The following pages provide ideas for activities that are suited to be part of Ecoliteracy sessions. They are separated in the categories of **“Guided play”** and **“Structural actvities”** (see Tips for Educators: the Session).

The structured activities are arranged into the following topics:

- Know the site
- Meet the forest
- Forest gifts
- Feel safe
- Mind the soil
- Web of life

..And more: the blank pages are for future facilitators to fill in!

Useful online resources for more inspiration can be found at the end of the book.

GUIDED PLAY

Introduction circle
Everyone stands in a circle. One by one, people introduce themselves by mentioning their name and one activity or object that they like. They make a movement or sound. The rest of the group then repeats "This is (insert name) and he/she likes *this activity* and they mimick the movement or sound.

Create bracelets with your names
Learners are given woodchips with a hole on them. They decorate them and write their names on them. Then they can pass threads of their liking and wear them during the classes.
Materials needed: Hands &crafts material, plaques for names

Human knot
Circle up and join your hands together to form a human knot out of your arms. The goal of the game is to untangle yourselves without letting go of the hands you are holding. After untangling, you will be standing once again in a regular circle.
Tip: In groups of 8-12 learners. It is important that the participants have reached a high level of trust. Introduce a safe word that they can use because this activity involves strong physical contact.

Sow seeds
Plant seeds of wild plants selected by a facilitator. Suggestion: While the learners sow the seeds, they learn about their variety of plants which they are planting, and what will be the benefits of having these plants there.
Materials needed: Native seeds

Nature themed dance
Practice a dance (e.g. a haka dance) created by facilitator(s). The topic is on food forests, nature, soil etc. Variation: the learners can create the dance themselves: a group of learners can be given some keywords and ideas to create the dance. Then this group teaches the dance to other learners.

Walk the path
In our food forest there are specific paths to be used by the learners. In order for them to know and engage in keeping this rule, we have developed this activity. The learners form a line and walk the paths altogther, usually dancing and singing about the names of the paths. These names are relevant to an animal that lives in the food forest or a characteristic of the path. The learners are also assigned in writing and decorating wooden signposts to indicate each path.
Materials needed:
Hands &crafts material, wooden signposts, non obligatory: musical instruments

GUIDED PLAY

Creative Garden

Set up a child-led plot (or learner-led if the gardeners are not children), where the gardeners will assign themselves responsibilities such as: watering, composting, taking notes, minding the paths, weeding etc. The idea is that the learners will feel responsible to tend to the needs, learn from their mistakes and experiment with minimal supervision in order to express their interests and ideas.

Materials needed: Gardening materials that depend upon the kind of garden: for example pots, compost, soil, mulch (compost carboard, leaves), gloves

Tips for facilitators: prepare the learners by visiting a garden or farm that serves as a prototype for their garden. Ask open ended questions such as: What shall we do so we don't disturb the animals in the soil? Why are we weeding, and how shall we do it?

Adopt a tree

Allow the learners to choose a tree. They can take some time to wander around the forest, choose their tree which is going to be their friend and decide what this relationship will entail. They can give it a name, assign a gender, write a story about it, bring gifts etc. This relationship can continue throughout the season (and seasons to come).

Sense of place exercise

All learners find a place somewhere in the food forest to sit down alone. For a maximum of 5 minutes they will just experience, while being silent; see, listen, smell, feel. Just as with your parents and friends you notice how the suroundings lok or smell like. They can also notice how the wind blows, how fresh the grass smells or how different birds sound.

Fox walk

Fox walking may seem strange at first but is 'the good way' to move in a forest because it maximizes our awareness of what lies and lives around us. To optimize the experience you can try it bare feet! Here is how it is done:

1 – Initial Contact:
When your foot comes down, the first point of contact should be the outside ball of your foot that is closest to your little toe.

2 – Roll To The Inside:
Then roll your foot laterally until the outside ball and inside ball of your foot are both making contact with the earth.

3 – Lower The Heel:
Lower your heel so that your entire foot is in contact with the earth.

Walk the walk… As you fox walk forward, your feet should be placed directly in line with each other. This creates maximum balance, silence, and the least disturbance possible.

Anytime that we are fox walking, we should also exercise a wide angle type of vision. Essentially a wide angle vision is a 180 degrees view. Try that: spread your arms as far as you can while looking forward. Head straight look forward but at the time perceive your 2 hands at opposite sides of your body (spread at almost 180 deg from each other). When you maintain this vision you increase your ability to see movements. You are simply increasing your vision field.

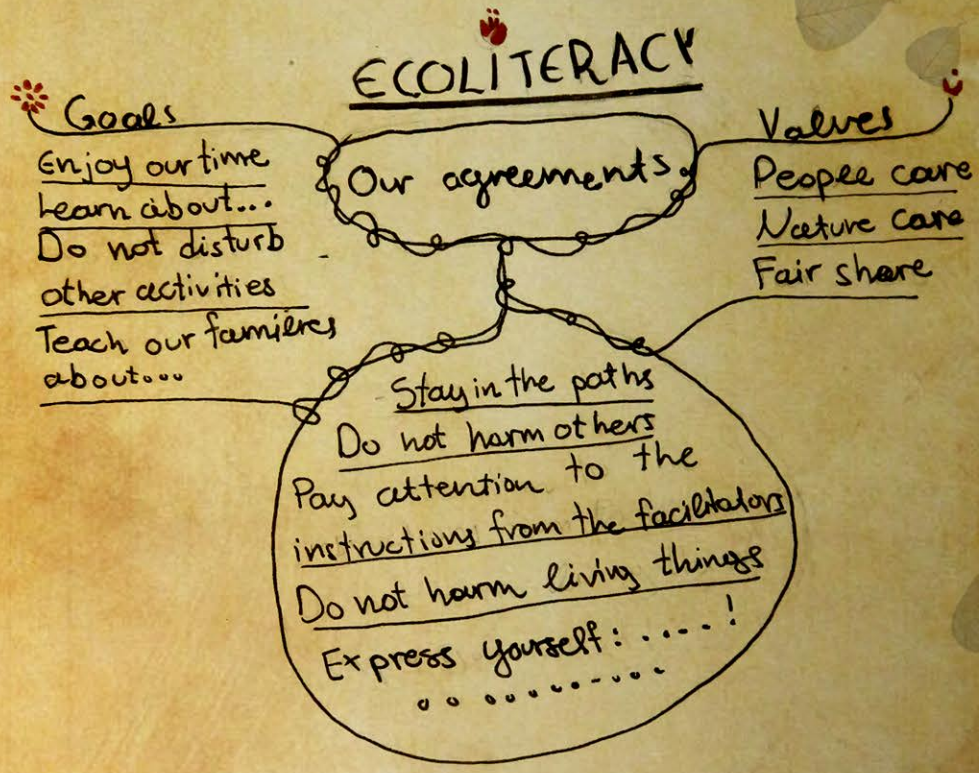
Resources:
There are plenty of useful videos that explain this technique online. https://www.earthwiseaware.org/the-no-purpose-stroll-fox-walking/, https://www.ted.com/playlists/398/reconnect_with_nature

TOPIC: KNOW THE SITE

The first step of an Ecoliteracy season is to express our commitment to respect the place that is hosting us. That will alow us to cultivate the feeling of responsibility and care towards that space. It is a kind of ownership of a shared valuable place. That will also allow the classes to exist without negative effects to other users of the space. Respect something/someone is getting to know it, to understand and create clear rules around the behaviour around it and what is our personal or collective goal during our being in this space. What do we want to learn about? What can we experience? How can we commit in opening up our mind, our senses, and our heart to our immediate environment?

"So here we are (..)
The "so" is ba. If you look up ba in any Japanese-English Dictionary you'll find it means place or site or occasion . And these are all true in the most general sense—ba is a pointer to a kind of awareness that something of importance is happening in time and space. Everything, properly considered, is of importance, but we, being the limited and biased creatures we are, can know the significance of only a few of such things at a time, so we need a way of saying this one—this one's important . And this is true for each of these meanings—this place, this site, this occasion."

Jim Kacian, 'So:ba', International Haiku Conference (SUNY Plattsburgh, NY, 2008)



PRACTICE BOUNDARIES

Learning goals:
Familiarize with the ecoliteracy zone, establish boundaries

Materials needed:
List of areements/rules of ecoliteracy classes, material to make boundaries around paths and trees.

Location:
Food forest, ecoliteracy zone.

Description

Sowing: Introduction on boundaries: where can you see them in nature? How important are they in a garden? In the classroom? Why do people need boundaries? Ask questions about what would the agreements should be regarding boundaries for the ecoliteracy classes of this season. Write down their ideas on a board and add more if needed.

Growing: The learners remain silent, and walk around the ecoliteracy zone. They are instructed to always keep in mind a certain radious around them where they don't want somebody to enter. After some minutes, they are instructed to use provided materials, such as branches or bricks to set boundaries for paths and trees- to mark places we should not enter.

Harvesting: Celebration, brainstorming for naming the paths andplaces they are allowed to go to. Reflection questions such as: how did the walking make you feel? How would the plants benefit from the boundaries?

Tips: This activity has many variations and it is used often in dance or theater classes. It can be done many times as "guided play" throughout the season. It can also be connected to some of these activities, such as painting signposts.

Resources/References:https://confidencemeetsparenting.com/personal-space-activities-for-kids/

EXPRESS YOUR INTERESTS

Learning goals:
How to walk in the food forest, be observant and communicate to the facilitators what you wish to learn about this season

Materials needed:
Hands & crafts material

Location:
Food forest, ecoliteracy zone.

Description

Sowing: Introductory talk about the importance of walking in silnce and observing.

Growing: Instruct the learners to observe the food forest in smaller groups to find an item/totem that connects their interest or curiosity to what they want to learn in this semester. They can take this item/totem, but need to remember to bring it back to where they found it later. After the walk is finished, the learners can draw their item, what it relates to for them, why they like it and what they want to learn.

Harvesting: The learners can share their findings and drawings in a reflection circle. They give it to the facilitators and if they have an item, put it back where they found it.

Tips: This activity is important in order to start the season showing the value of co-creation and willingness to hear the learners' needs and interests. Learners must feel that they help to build the program, and that their feelings are always heard. For silent immersions into nature and observation teaching inspiration, see resources.

Resources/References:
https://www.earthwiseaware.org/forest-immersion-going-back-home/

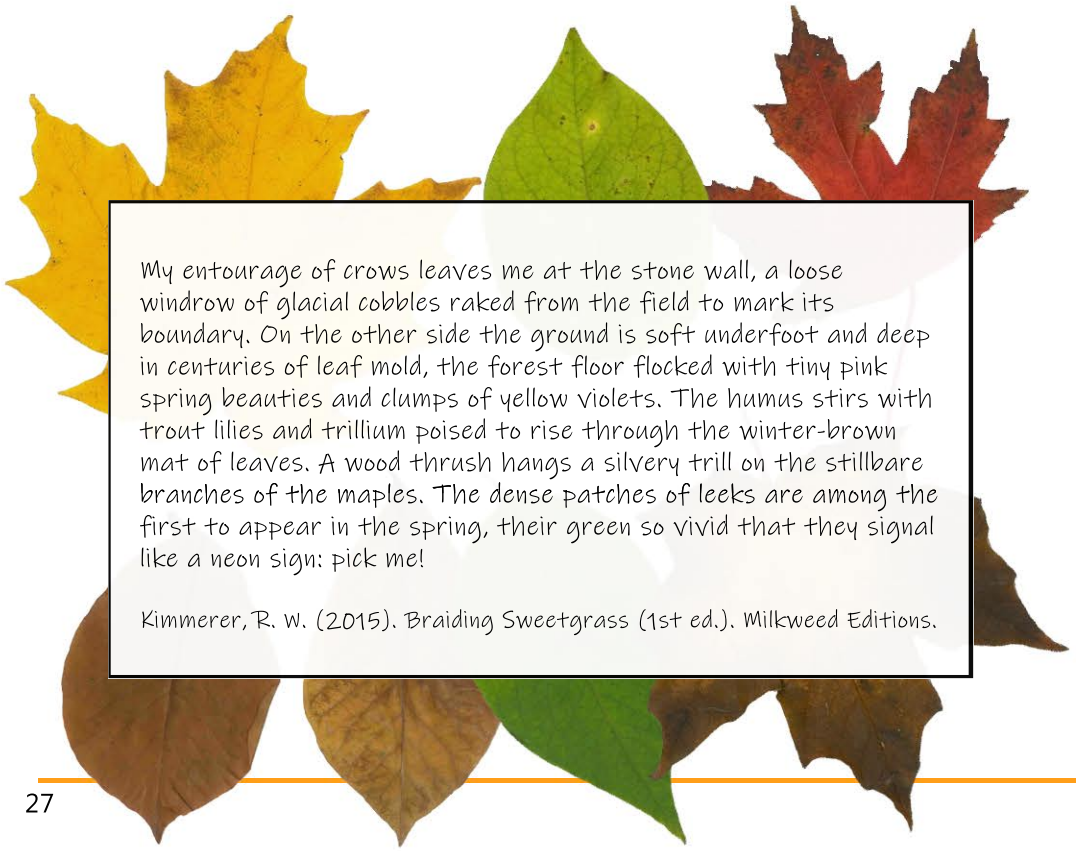
https://www.sharingnature.com/silent-sharing-walk.html

TOPIC: MEET THE FOREST

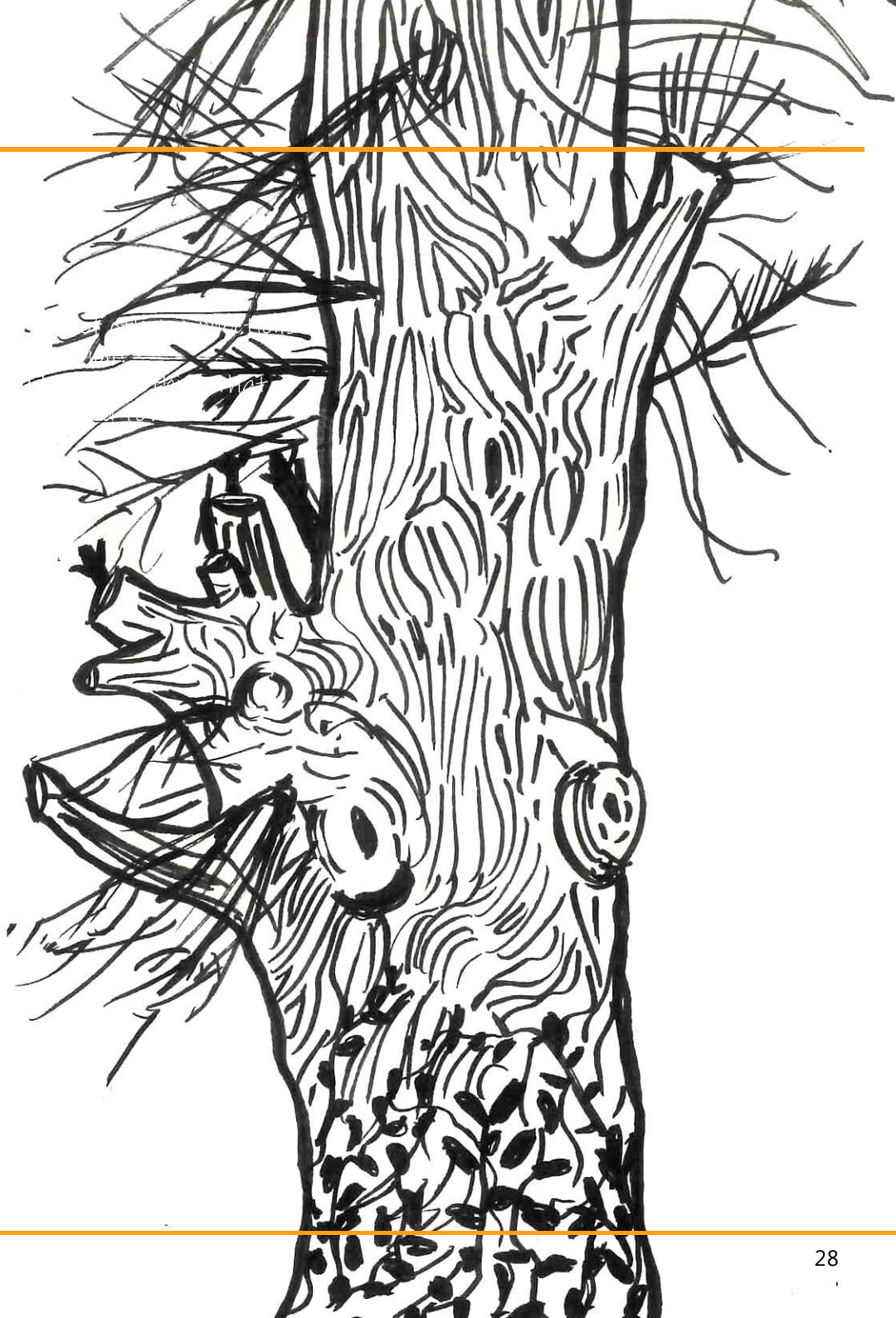
Location:
Forest or food forest

A forest can take many forms. A forest can be boreal ot temperate, natural or planted. It can be a diverse food forest or a tree monoculture. How many words do we know for a forest, and in how many languages? In what ways have humans interacted and shaped woodlands through time? And finally, what does forest mean, where does this word come from? The meaning and history of the world is obscure..

In this chapter, the activities are place-based, focused on the discovering of ecosystem dominated by trees and wild living things.



> My entourage of crows leaves me at the stone wall, a loose windrow of glacial cobbles raked from the field to mark its boundary. On the other side the ground is soft underfoot and deep in centuries of leaf mold, the forest floor flocked with tiny pink spring beauties and clumps of yellow violets. The humus stirs with trout lilies and trillium poised to rise through the winter-brown mat of leaves. A wood thrush hangs a silvery trill on the stillbare branches of the maples. The dense patches of leeks are among the first to appear in the spring, their green so vivid that they signal like a neon sign: pick me!
>
> Kimmerer, R. W. (2015). Braiding Sweetgrass (1st ed.). Milkweed Editions.



MEET A TREE

Learning goals:
Use all senses, trust, be gentle, observe the uniqueness of trees.

Materials needed:
Blindfolds

Location:
Forest or food forest

Description

Sowing: Ask the learners about their relation to their other senses. Which one do they use the most? How could they walk around the forest without their sight? Do they know the trees they see around them?

Growing: Divide the learners into groups of two. One of them will put on a blindfold and their partner will guide them with care around the area. When the guide wishes, they lead the blindfolded learner to a tree and allow them to feel it closely. After that, they guide them to the point where they began. The blindfolded learner takes off the blindfold and tries to find their tree. After that they change roles.

Harvesting: Reflection circle. Example of questions: how did you feel when you were guided/were guiding? What strategy did you use to find your tree?

Tips: Ideally the environment is very quiet and it can be combined with meditational activities. To get most of the activity, it is interesting to remove the shoes (and perhaps practice "fox walking", see guided play)

Resources/References: sharingnature.com/meet-a-tree.html

WILD TOUR

Learning goals:
Discover and remember the physical characteristics and special quality of a creature.

Materials needed:
Pencils and paper, magnifying glasses, binoculars

Location:
Forest or food forest

Description

Sowing: Allow the learners to choose an animal, plant or element that is easy to observe, such as a bird, frog, insect,tree or even a rock or water stream. To see your creature well, use binoculars or a magnifying glass.

Growing: As you study your special animal (or plant, etc.), look for characteristics you've never noticed before—and write in a piece of paper: A.) List seven things you've discovered about your animal or plant.B.) Choose a word that describes how your animal moves (or stands, if it is a plant) C.) Write a word or phrase that expresses the unique spirit of your creature:
D.) If you were to give your animal or plant a name, what would it be, and why?

Harvesting: Reflection circle. Share the outcomes of our excercises. What was the most exciting thing you discovered? Did your ideas about this element/creature change?

Tips: It's ideal to use a poem or a piece for literature as an example for this activity, like the one indicated by the source webite.

Resources/References:
sharingnature.com/observe-nature-like-john-muir.html

TOPIC: FOREST GIFTS

It is important to remember to celebrate the gifts of nature. It provides us with nourishment, beauty, inspiration, dreams, warmth, movement, enjoyment, it clenches our thirst, it cleans our bodies, and so much more.
There's nothing more rewarding and educational than learning to recognize the gifts of nature, the justice (or not) in sharing them and thinking of ways to show our respect and gratitude.

> But to our people, land was everything: identity, the connection to our ancestors, the home of our nonhuman kinfolk, our pharmacy, our library, the source of all that sustained us. Our lands were where ourresponsibility to the world was enacted, sacred ground. It belonged to itself;it was a gift, not a commodity, so it could never be bought or sold.
>
> Kimmerer, R. W. (2015). Braiding Sweetgrass (1st ed.). Milkweed Editions.

SOUNDSCAPES

Learning goals:
Focusing our attention to sounds, appreciate the richness of sounds in the natural environment, be attentive

Materials needed:
cards with names of sounds (see Resources), pieces of paper and pencils for notes

Location:
Places where various natural sounds can be heard

Description

Sowing: Start a discussion around sounds (they don't have to be "natural"): Are there sounds you like to hear? What is common between those sounds? What do you feel when hearing them? How do these sounds change over one day, over the year etc.? Are there sounds you don't like hearing?

Growing: This involves walking a route. First, a collection of sounds is written out on paper (see Resources) and put in a bag. Everyone chooses one (or several) and then has to listen out for their sound throughout the walk.This is one way to begin to collect the sounds and their locations to describe the soundscape of an area. It could be done in stages, with the whole group stopping at points along the way. It is useful for them to have a piece of paper and mark their observations.

Harvesting: The whole group assembles and discusses what they discovered. A map of the area is laid out to them and they draw, mark or pin the sounds they "collected".

Give out an assignment: Sound journal! Choose something that you like to hear that is not human. For a whole month keep an ear out for it. Listen for how it changes. Describe it into multiple ways. Try drawing the shape and movement of the sounds. Make audio recordings. Can you capture your 'soundmaker' in a photo or on film?

Tips: This can be combined with meditational activities. To get most of the activity, it is interesting to remove the shoes (and perhaps practice "fox walking", see guided play)

Resources/References:
https://www.sensorytrust.org.uk/resources/activities/sound-activities

"A surprising look at what we can learn through nature's symphonies, from the grunting of a sea anemone to the sad calls of a beaver in mourning.":
ted.com/talks/bernie_krause_the_voice_of_the_natural_world?referrer=playlist-reconnect_with_nature&autoplay=true

CELEBRATE THE SEASONS: SUMMER

Learning goals:
Learn about natural cycles and processes, celebrate the change of seasons, develop systems thinking

Materials needed:
Poster or model of Earth and Sun, paper and pencil for notes, arts and crafts material, magnifying glasses.

Location:
Forest/food forest/natural reserve

Description

Sowing: Explain the astronomic cause of seasons through the celebrations of astronomical events (a calendar, visualizations on a board or flipchart, or a model of the Earth and the Sun are useful) :

Seasons follow the cycle of events marked by solstices and equinoxes. In the Northern hemisphere, the June solstice is our Summer solstice and in December is the Winter solstice. Solstice comes from the Latin words sol, meaning Sun and sistere, meaning to come to a stop or stand still. On the day of the June solstice, the Sun reaches its northernmost position, as seen from the Earth. At that moment, its zenith does not move north or south as during most other days of the year, but it stands still at the Tropic of Cancer. It then reverses its direction and starts moving south again. The opposite happens during the December solstice. Then, the Sun reaches its southernmost position in the sky - Tropic of Capricorn - stands still, and then reverses its direction.towards the north. In many ancient cultures of the North, this solstice marks a time of abundance celebrated with festivals (see Resources).

Discuss about the activities of living beings in the summer. For instance: how your local fauna from birds to mammals raise their young? Are the birds singing the same way as in Spring? What are the squirrels, or the insects doing this time of year? Think about the differences between deciduous trees and evergreens.

Growing: Divide the learners to activity groups according to their interest:
Goup 1: The first activity is about finding the colours of the season. Pieces of paper and coloured pencils or watercolours are needed. The learners find a quiet area and paint a wheel of the colors that they see. Can you give a name to these hues?
Group 2: The second activity is about walking and observing nature. This can include the exercise of the activity "Wild Tour", or any kind of "scavenger hunt" (see Resources). It is interesting to include sounds, smells and other feelings in the list and not only objects we see.
Group 3: The third activity is about learning about the wild herbs of the season. For example about the nettles that grow in the food forest: Talk about why are the nettles painful to touch, talk about their different uses (see Resources) and how to harvest them. Look with the magnifying glass the leaves of the nettle. Observe the other animals that live there. In the summer you can also see the flowers of the plant. The females have green flowers and the male ones have yellow. They are pollinated with the help of the wind.

Harvesting: What did we learn today? How are the stars connected to the life of species here on Earth? How would you like to celebrate the coming of this season and the end of it? At this point, you can find volunteering learners who want to complete a season journal, or phenology wheel (see Resources), and share it with the rest at the end of the season.

CELEBRATE THE SEASONS: SUMMER

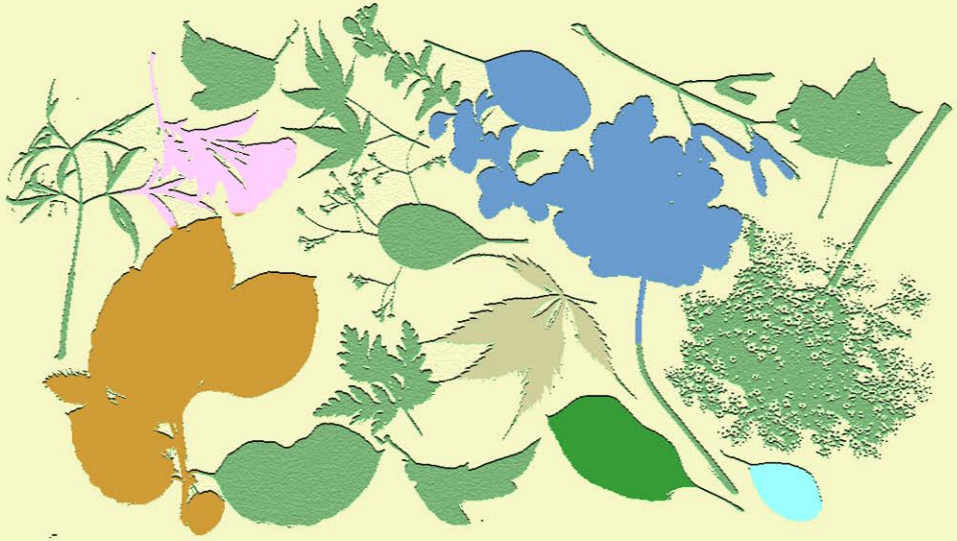
Resources/References:
Ideas for celebrating all four seasons:
earthwiseaware.org

why we celebrate the summer solistice:
blogs.scientificamerican.com/literally-psyched/why-we-celebrate-the-summer-solstice/

What is a wild scavenger hunt
greenchildmagazine.com/nature-scavenger-hunt/

About teaching children about nettles:
Natuurwijs.nl

About different assignments like phenology wheel or seasons journal:
theblossomtreehomeschool.com/



PREPARING A FEAST

Learning goals:
Explore food network, learn about permaculture principles, discuss choices of consumers, learn about carbon and water footprint, cooperate and celebrate by preparing food

Materials needed:
Recipe cards (see chapter "Recipes"), Cooking utensils, kitchen or campfire
For each working group: 1 worksheet, money, 1 pencil, 1 cloth shopping bag

Location:
Ecoliteracy zone and/or kitchen, shops, and farms in the area

Description

Sowing: Divide the learners into groups of 3-5. Hand out recipes (see "Recipes") with as many as possible ingredients that are in season. Let the groups read through them. The aim is to prepare this meal/snack in a way that it is possible to quantify how "sustainable" our choices are.
Hand out a worksheet on which they take notes on their choices (see next page). Let the learners think of where they can find the ingredients. Some of them are available in the food forest or nearby farms (see activity "Harvest vegetables"). Discuss what sustainable means: for this exercise, it can be relevant to how local the food is, how much resources are used for its packaging, and whether it is in season. Each group will have a budget for buying the materials.

PREPARING A FEAST (PAGE 2)

Growing: Not all ingredients can be found in the food forest. Some must be harvested or bought from elsewhere. The groups can go to nearby (organic) shops, supervised by adults, and choose the ingredients. Explain first to the groups how much time and money they have. It is important to talk about how we are supposed to behave when leaving the food forest, when visiting a shop, and where we are meeting after the activity. When all materials are collected and the learners are back from shopping they have some time available to fill in their worksheet. After that, the learners along with the facilitators prepare the recipes.

Harvesting: Celebrate the end of the cooking. Gather around and share the prepared meal. Discuss about the diversity of the choices; which recipe was the most "sustainable"? Could it be more, or less? How could we measure sustainability differently? Why are these choices important?

Tips: To facilitate the discussions, it is useful to divide the topic into the categories of 'Earth Care", "People Care" and "Fair Share', which are the pillars of permaculture ethics. For example, when discussing about "Earth Care" we can ask questions about food locality; when food is travelling from far, more resources are spent and more greenhouse gases are released.
This activity can take more than a week to be completed and include assignments for home or school. Future exercises can include map of where the food is coming from, or what do different labels mean.

Resources/References:
The activity is a version of the "Mind the food" session as described in Lusie Anderslowe, Gaye Amus, & Didi A. Devapriya. (2018.). Earth Care, People Care and Fair Share in Education ,page 95.

Recipe ideas:
https://www.devoedselboss.nl/recepten-uit-het-voedselbos/
https://voedseluithetbos.nl/recepten-tool/
https://www.voedselbosglimmen.nl/recepten/
http://www.voedselbosgedeeldeweelde.nl/category/recepten/

Worksheet example:

Your quest is to prepare _____

For that you can spend _____Euros. For this you need:

Item	Where does it come from	Packaging material
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

The material that travelled the longest distance is _____

The material that travelled the shortest is _____

Could that be different?

_____

_____

_____

The item with the best packaging is _____

The item with the worst packaging is _____

Why?

_____

_____

_____

TOPIC: FEEL SAFE

We humans need to be in places where we feel comfortable, so we can go on with our daily activities, have fun, eat, sleep and rest. We need a home to feel safe, protected by everything that causes us stress. Other creatures are in need of this too. They make the home themselves using what nature provides. Birds, fish and amphibians find nurseries in the safety of swamps, birds build nests and bees build beehives. There are so much to feel and learn about safety!

Hydrodictyon is a safe place, a nursery for fish and insects, a shelter from predators, a safety net for the small beings of the pond. Hydrodictyon— Latin for "the water net." What a curious thing. A fishnet catches fish, a bug net catches bugs. But a water net catches nothing, save what cannot be held. Mothering is like that, a net of living threads to lovingly encircle what it cannot possibly hold, what will eventually move through it.

Kimmerer, R. W. (2015). Braiding Sweetgrass (1st ed.). Milkweed Editions.

HEDGEHOG HOME

Learning goals:
Learn about how animals (hedgehogs in this example), are in need of a home, explre the meaning of safety and build empathy

Materials needed:
Bricks, sticks, branches, leaves, shovel

Location:
Not specific

Description

Sowing: Ask open questions about the animals that live in the surrounding area. Have you seen these animals? When do they rest? What is important for them to feel safe? Introduce them to the hedgehog. What do they know about this animal? Then, the learners are instructed to walk around the food forest quietly, imagining they are a hedgehog.

Growing: (See example in "Resources/References".)
Divide the learners in groups of 2-5. Show them examples of hedgehog houses if possible and give some basic instructions of how to build one. Show them what material are already available (eg. bricks) and ask them what else do they need. A facilitator can help them to gather the materials.

Harvesting: Ask the learners questions such as:

For which other animal do you want to build a home?

Have you seen animal homes around your school/home?

What do we humans need in a home? Why do we need those things?

Tips: If the learners are very young it is good to have direct supervision through all stages of building.
We built 3 hedgehog houses in the Fall of 2022 because this was asked by the children in the introductory lesson. It is nice to try other anials as well. The next two activities is about building homes for bugs and bees, but good candidates are owls, bats, ducks, chickens, etc.

Resources/References:
https://www.nhm.ac.uk/discover/how-to-make-a-hedgehog-house.html

Left: *Photos from hedgehog houses built with children in the food forest Droevendaal.*

HOTEL FOR BUGS

Learning goals:
Learn about the importance of insects, learn how to use natural and recycled/reused material

Materials needed:
Natural materials: twigs, leaves, flowers, etc., corrugated cardboard (cardboard with grooves and ridges), toilet paper or paper towel, tubes, rolled up paper, pieces of bark, hollowed out branches, reeds, or logs, empty box (shoe box or cereal box sized), plastic or glass jar or container (yogurt or applesauce cup)

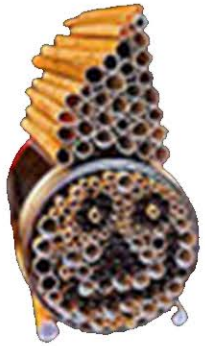
Location:
Not specific

Description

Sowing: Ask open questions: What kind of bugs you know? Why are insects beneficial? How could we help a garden have more insects? Have you seen/built a bug hotel before? What maerial is best to use? Are all the materials that you see natural? Are they recycled or reused?

Growing: Guide the learners into building a hotel. It looks simple but there are some things you should know ! (see resources). Start with a structure (one of the boxes) into which you can insert bug hotel materials. Gather all of the insect hotel materials and start layering them into the structure you have selected. You could also use plastic/glass jars, toilet paper/paper towel rolls, or use cardboard pieces as dividers to create more mini compartments.Once all of the compartments are ready, fill the hotel with leaves, twigs, rocks, and other natural materials. Place your hotel in a dry place, preferably in a position where it will catch the morning sun. A location near vegetation, wood piles or water will attract more bugs and insects.

Harvesting: Guide the learners into a role-play and storytelling activity: Imagine that you are a bug in search of a place to live. What kind of bug would you choose to be? What would you look like? Would you like to live in the bug hotel you just created? Write or draw a story about your life as a bug.



Left: Natural Museum of Florida

Right: naturgartenfreude.de

(see resources)

Tips: This activity fits well in topics related to Web of Life, Biodiversity, Insect life etc. The focus could be more to the meditation and storytelling than the construction of a bug hotel, depending on the preferences of the learners.
Plus, its is good to check with the learners the hotel often and write a report on what you see. This could be the regular responsibility of some learners.

Resources/References: This activity is adapted from the website of Museum of Life and Sciences :
-www.lifeandscience.org/wp-content/uploads/2022/01/Bug-Hotel.pdf0

and Florida Museum of Natural History :
-www.floridamuseum.ufl.edu/,

To learn more about insect hotel construction and mantainance:
entomologistlounge.wordpress.com/2017/09/18/insect-hotels-a-refuge-or-a-fad/, &
www.naturgartenfreude.de/wildbienen/nisthilfen/schautafeln

COUNCIL OF ALL BEINGS

Learning goals:
Develop empathy, understand human impact to non-human beings, be attentive

Materials needed:
Cardboard, color markers, paste, tape, scissors, string, fabric scraps, etc.), small table or ground cloth, chairs, clothes or cushions where people can sit comfortably, non-obligatory: musical instruments, talking stick

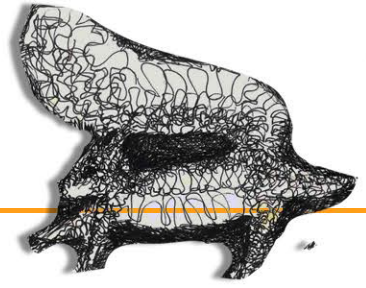
Location:
Not significant

Description

Sowing: : After introducing the activity and the learning goals, allow the learners to think of a being to transform to and represent in the council. Encourage them not to overthink. This being doesn't have to be something that we know a lot about, and it can be any non human being, be it plant, animal, or ecological feature, such as swamp or mountain. It would help to do a ritual opening while the learners are thinking, for example by smudging everyone with sage or grass smoke, music, etc. Then lay out materials on tables or ground cloths. People can attach their masks with string, elastic, or by taping the mask to a stick to be held in front of the face. Be sure everyone cuts holes to see and speak through. If time allows, allow some time so people practice moving around and make sounds like the being they chose.

Growing: The masked beings move to the Council ground "in character" when summoned by bell, drum beat or animal call. When they are all in the circle, the guide, as their adopted life form, welcomes them and invites them to identify themselves.

It would help to use a talking stick in this process (see "Deep Listening: talking stick"). One by one around the circle, each being introduces itself in a ceremonial fashion:
"I am Wolf and I speak for the wolf people." "I am wild goose and I speak for the migratory birds." Etc.
After they all introduce themselves, the guide invites them to speak about the issues they want to address to the council. This should be very brief statements, for example:
" As a wolf I am deeply concerned because humans are hunting us, not allowing us to live in the forests".
After that circle is over, the guide reflects that most problems that the beings describe seem to derive from the activities of humans:
"It would be good for humans to hear what we have to say. Let us summon them to our Council, to listen only. Would five or six of you put down your masks and move to the center to be humans?"
Some learners sit back to back in the middle, facing outwards to the circle of beings. From now on, they are addressed directly by each being.
When all the beings have had a chance to address the humans and call them to account, the guide may reflect:
"Now the humans feel overwhelmed by all these that are addressed to them. It does not serve our survival for them to panic or give up. If they can awaken to their place in the web of life, they will change their ways. What strengths and gifts can each of us give them to help them now?".
Now each being has the chance to offer to the humans the strengths and gifts inherent in each life-form. For example:
"I the flower, can offer you my beauty and beautiful smell, and I shall call the bees that your crops need to multiply".



COUNCIL OF ALL BEINGS (PAGE 2)

Harvesting: The ending can happen in a variety of ways: First each of the participants will have a chance to thank for this opportunity, take their masks of (burn them or keep them), and talk briefly about what they felt during this activity. Then, the learners can meditate or break into a wild dance.

Tips: This activity is best for learners over 10 years old, because it requires some knowledge on the impact of humans to nature. Also the circle shouldn't include more than 15 people.

Another way to adapt this activity to young children is to give them some time to prepare: introduce the activity, allow them to choose a being, and continue with the rest of the activity in the following week.

Resources:
Adaptations of the Council of All beings:
workthatreconnects.org/resource/council-of-all-beings/
theworkthatreconnectssa.wordpress.com/the-council-of-all-beings/
earthfireinstitute.org/honoring-the-voices-of-all-beings-coming-together-in-council/

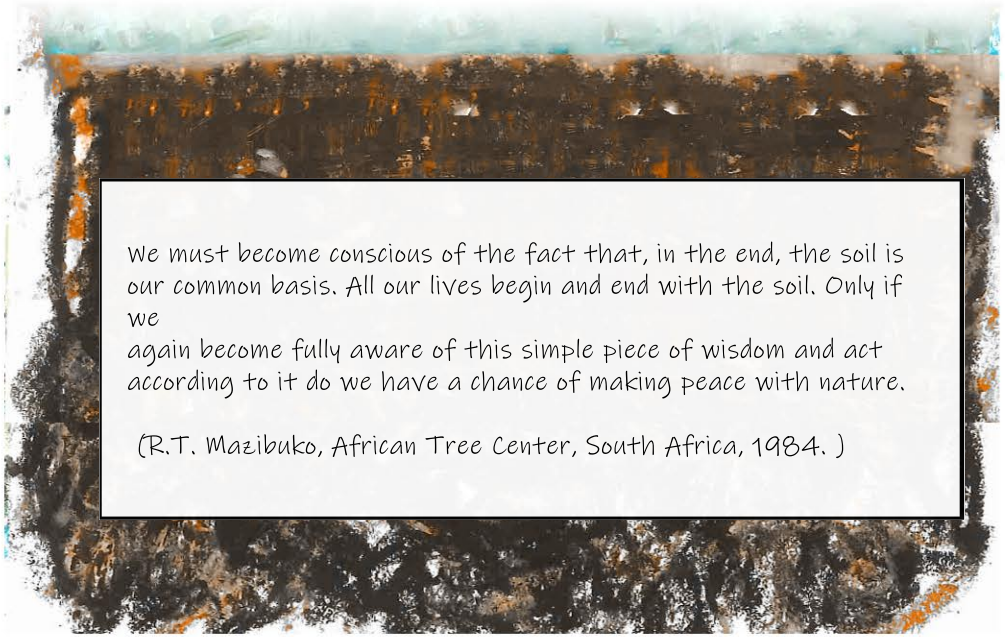
DEEP LISTENING : TALKING STICK

The talking piece may be a talking stick, an object from nature such as a beautiful shell or large rock, or another item of value and meaning to the group.
The talking piece is a physical item that is used whenever the practice of attentive listening is particularly important. During check-in and at certain times during the circle session one person shares about the topic at hand by holding the talking piece and speaking from their heart, while all others listen attentively and without interruption.
To begin using the talking piece, introduce its concept at the first circle or council session. Then, either provide a few types of talking pieces and invite circle members to jointly choose one to be their designated piece for the duration of their circles. OR, in contrast, provide materials and invite the group to create their talking piece together.
Excerpt from the Girls Circle Facilitator Manual, Unit 2: The Girls Circle Model, Pages 29-32.
onecirclefoundation.org/blog/facilitator-tips-tools/talking-pieces.html

TOPIC: MIND THE SOIL

Did you know that there are more living organisms in a tablespoon of soil than people on Earth? Soil is a world made up of organisms, minerals, and organic components that provides food for humans and animals through plant growth.
But soil is not important only for being the growing medium of plants! There are plenty of things it serves us and the planet: it regulates water flows, it recycles raw material, it is a habitat for many organisms, and of course, soil are the base material for roads, homes, buildings, and other structures set upon it, by us humans, and other organisms.

But what is soil in the end? Is it all its parts and functions or is it much more? How can we be good stewards of it? The following topic contains activities that help to understand and appreciate what is under our feet!



We must become conscious of the fact that, in the end, the soil is our common basis. All our lives begin and end with the soil. Only if we
again become fully aware of this simple piece of wisdom and act according to it do we have a chance of making peace with nature.

(R.T. Mazibuko, African Tree Center, South Africa, 1984.)

HARVESTING VEGGIES

Learning goals:
Get acquainted with the activity of harvesting, share fairly.

Materials needed:
Big containers for the harvest.

Location:
Nearby organic farm

Description

Sowing: Ask the learners if they have visited a farm before. What is their experience with harvesting? Introduce the farm which you will be visiting, and the rules of the activity (let them make propositions or guess the rules). E.g. we take x amount/number of objects, we don't keep what we harvested for ourselves, we disturb the soil as less as possible. etc.

If possible: meet the farmers, have the opportunity to ask questions.

Growing: Show the farm and letting the learners to harvest the produce. Put everything in a common bag and return to the food forest.

Harvesting: Possible questions of reflection cycle are: Did you enjoy it? What would you like to ask to the farmer? Did you see anything unexpected? After the reflection allow them to share the produce. Potential way of sharing: assign that to a small group of learners with a facilitator. Or instruct to take x number of items, and explain why

Tips: Excursion to farms will allow the learners to get acquainted with different farming techniques, and many issues relevant to where our food is coming from. This activity could be a whole day's trip.

Resources/References:

McCloskey, M. L., Kesterson, H., Mena, N. Z., Dellaport, J., & Bellows, L. L. (2020). Farm to Early Care and Education Programming: A Descriptive Study of Challenges and Opportunities to Promote Healthful Foods to Young Children.

Celebration Toolkit Tools & Resources For Celebrating National Farm to School Month, farmtoschool.org

Worldwatch Institute, T. (2017). EarthEd: Rethinking Education on a Changing Planet

BUILD SOIL PROFILES

Learning goals:
Learn to observe soils , learn about soil textures, take care of living animals.

Materials needed:
An empty jar or plastic bottle with a lid that you can see through, garden tool, manual driller, or big spoon for digging and scooping soil.

Location:
Not specific

Description

Sowing: Introduce the manual driller if you're using one. Explain the activity and ask about what do they think will happen to their soil samples. What is important to notice? eg. moisture, colour. What is important to be careful of? Eg. Do not leave open holes, to not take too much, not take living animals if possible.

Growing: The learners can work alone or in groups of two. They drill or take some soil with their hands. They first take the soil in their hands to observe it. After they take a handful and put in their jar. They add water and shake well.The result will be visible in the next day

Harvesting: see next page (”be the soil”)

Tips: if there is not enough time for this activity the spots can be chosen beforehands from the facilitators.

Resources/References: https://cosi.org/connects/?connectsid=168

BE THE SOIL

Learning goals:
Learn the following:

The soil has three types of mineral particles when it comes to size : sand, silt and clay

-Sand is the largest particle, and the pores between the sand particles are the largest, silt is smaller than sand, and clay is the smallest, and the particles of clay stick together.

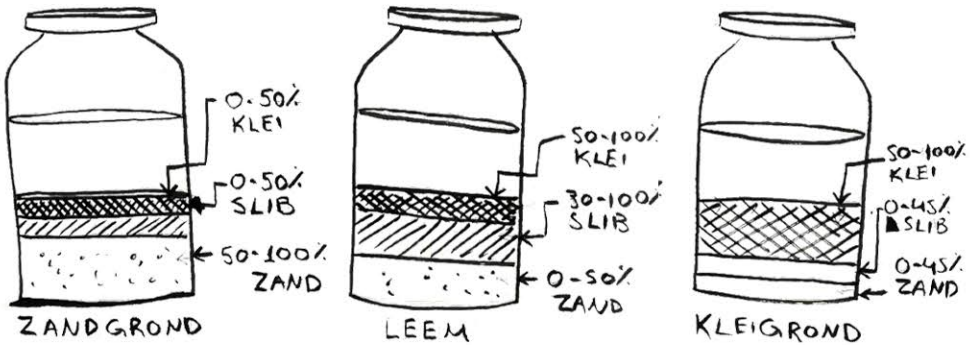
-Water and air flow in the pores between the particles: if pores are too small it is difficult to flow.

-When the pores are too big, water is flowing through, leaving the soil dry .

-The soil creatures in the soil need both water and air to live

Materials needed:
Our soil profile jars, 20 cards with roles : 3 water cards, 3 air cards, 1 worm card, 1 tree root card, 12 soil particle cards

Location: Not specific



Description

Sowing: Take one minute to look in the jars. Optional: give the learners a paper with explanation of what you see in the jar. Allow them to ask questions and explain what they see: the larger the particle, the heaviest it is, therefore they go towards the bottom of the jar. So you see the particles arranged according to size. The things floating on top is called organic matter. It's floating because it is much lighter than soil. It's everything that was or still is living in the soil. Can you give examples? (eg: roots, dead leaves, apples, worms, ants)

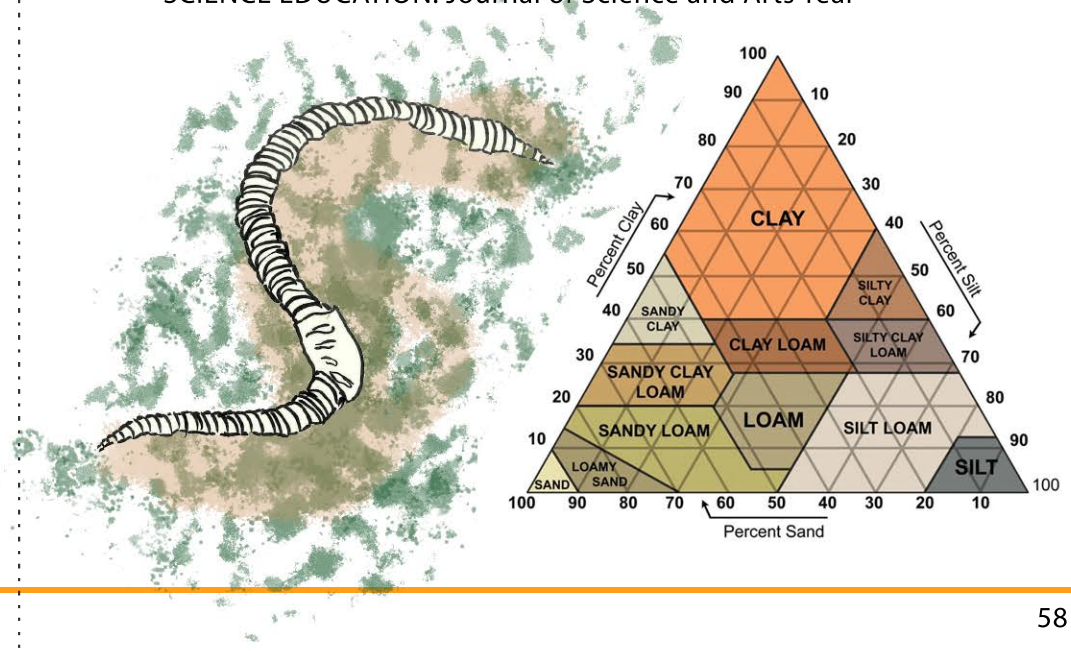
Growing: Give to all learners randomly a card with a role on it. The mineral particles and the worm/and tree root stand together, as a group. Instruct them that all particles are sand particles. After that, air and water go through the soil: "Now you are all sand, you are big, hands outstretched, you don't touch your neighbors. There is space between you. Now air is flowing through the sandy soil. The air gives to the soil creatures and the tree root valuable oxygen. Give the worms and the tree root a high-five when you find them! The air continuously walks around in the soil. Now it started raining, water drops are infiltrating into the soil they move easily but do not stay. The gravity is pulling them, they are free to keep moving towards the centre of the earth, which for the purpose of this game is one direction horizontally. *guide the water drops to leave the group* and do the same for silt particles: they are smaller than the sand, they put their hands around their body to look smaller. They also stand closer to each other, so water and air come in with difficulty. But still find the worm and the tree root. Do the same for clay- clay is very small and the particles stick together. Air and water cannot find the worm and the tree root that are trapped inside.

Optional: Ask the learners: "who believes that the soil in the food forest is clayly, which means it has more clay than other particles? *learners raise hands* then you are now clay! *repeat for the rest of the particles* Now run the game again with those particles" Let's see what's going to happen!

Harvesting: Look at the jars again, what do you see? Why do you think knowing the texture of the soil is important?

Tips: This kind of activity can be used to learn about other subjects as well, such as soil pH, water infiltration, oxidization of carbon etc.

Resources/References: This activity was developed for the food forest Droevendaal , but there is some body of research on embodiment and roleplaying in teaching: Aubusson, P., Fogwill, S., -Barr, R., & Perkovic, L. (1997). What happens when students do simulation-role-play in science? Research in Science Education 1997 -Craciun, D. (2010). ROLE-PLAYING AS A CREATIVE METHOD IN SCIENCE EDUCATION. Journal of Science and Arts Year

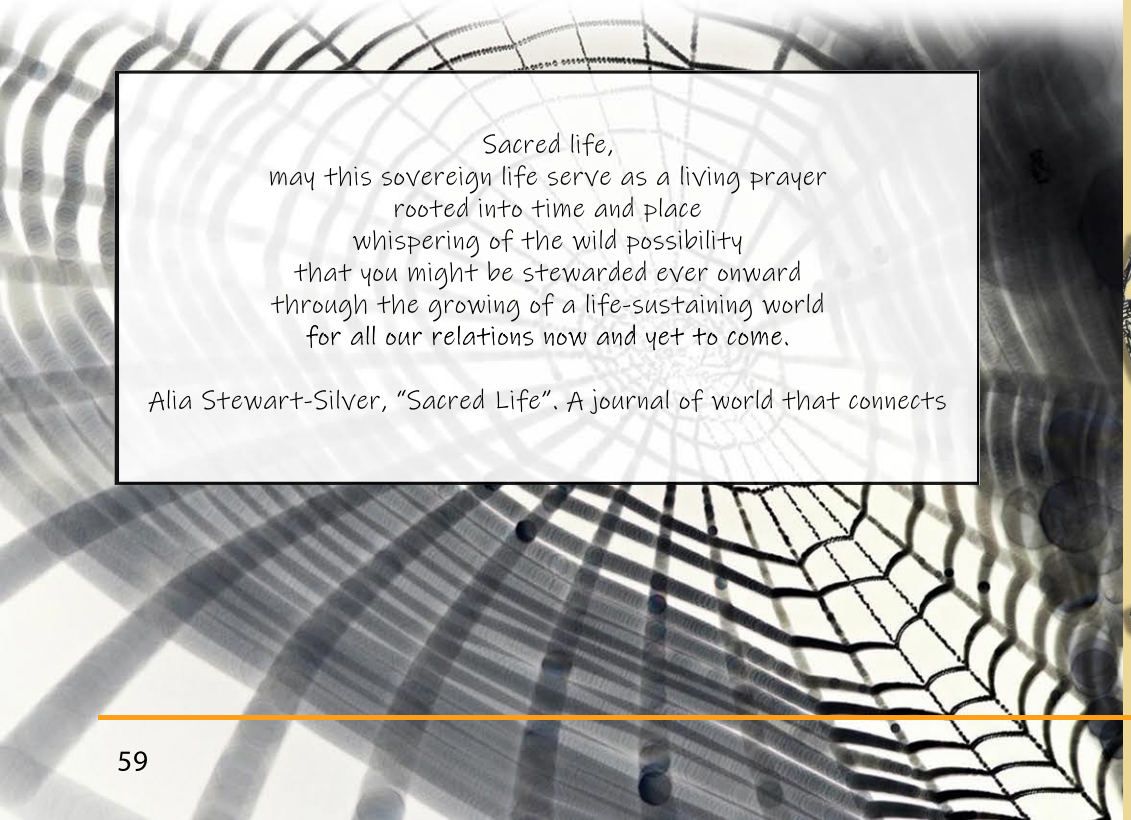


TOPIC: WEB OF LIFE

A web is a system; a set of elements that are connected via complex relationships, and make a unified whole. Individual things like mushrooms, people, rivers, clouds, stones, watersheds, plants, economies . They cannot be understood separately from the systems in which they exist.

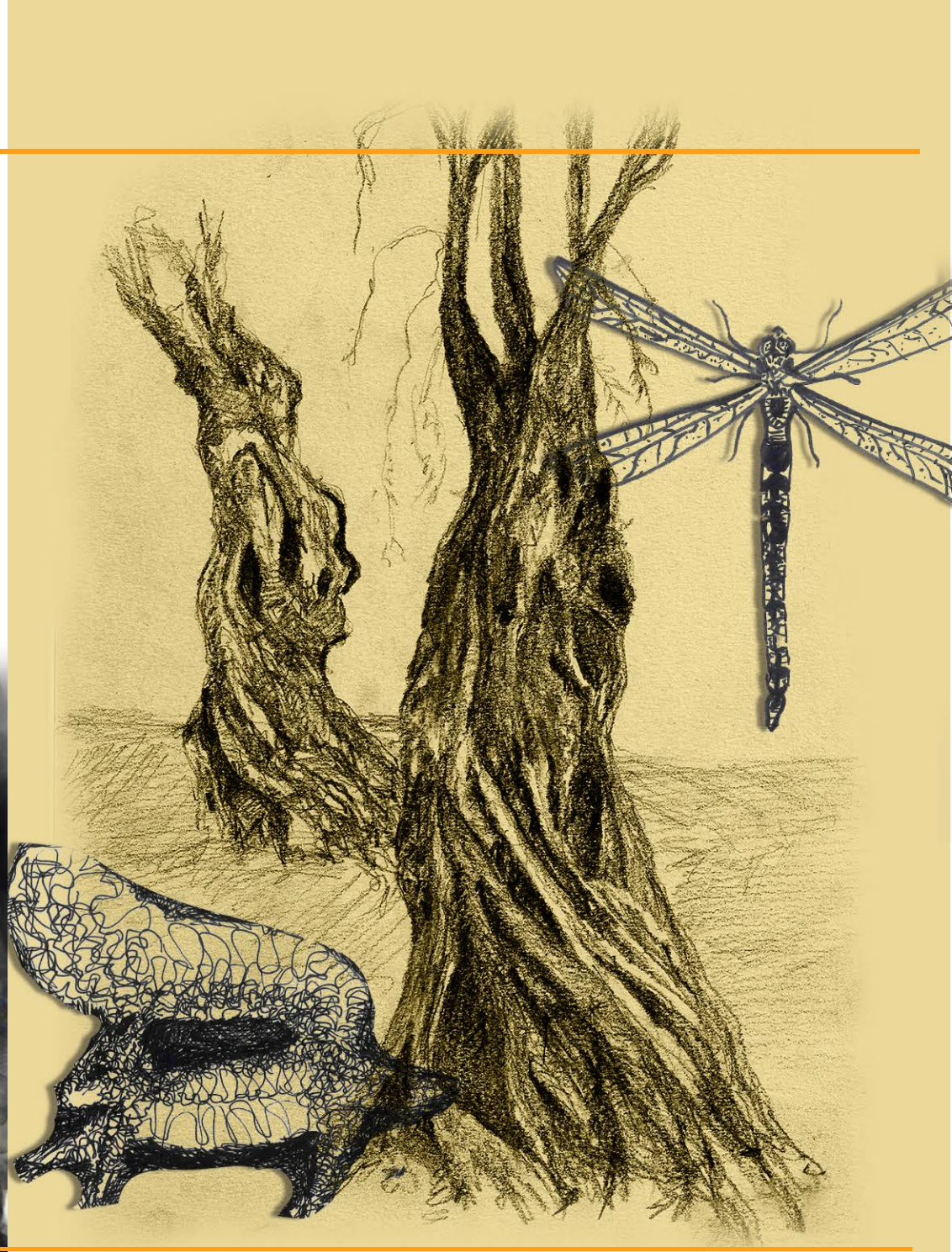
A systems approach helps us comprehend the complexity of the world around us; to think in terms of relationships, patterns and context. System thinking is therefore an important element in education for sustainability.

Moreover, when learning about the Web of Life, our focus is not on the quantity of the information or the quality of the content (eg. how many species can we recognize or how many facts can we remember). Our objective is to awaken our curiosity and imagination, while we always keep in mind that everything is a system within systems.



Sacred life,
may this sovereign life serve as a living prayer
rooted into time and place
whispering of the wild possibility
that you might be stewarded ever onward
through the growing of a life-sustaining world
for all our relations now and yet to come.

Alia Stewart-Silver, "Sacred Life". A journal of world that connects



WEB OF LIFE

Learning goals:
Learn about the connections of natural entities in an ecosystem

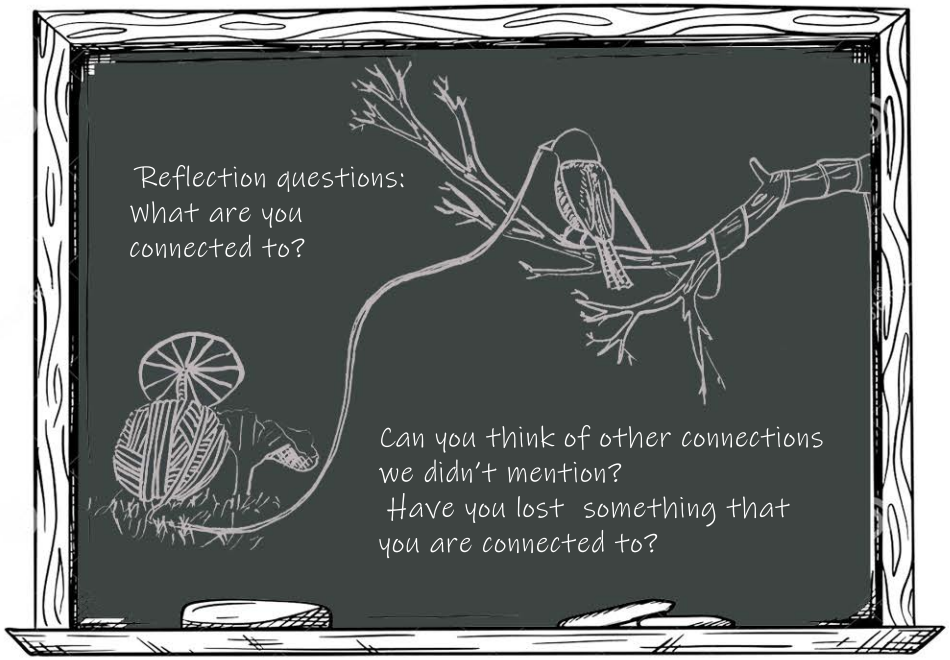
Materials needed:
Thread, rope or yarn, cards with names of natural entities/creatures

Location:
Not specific

Description

Sowing: Ask open questions about what living and non-living things are how cn they be connected to each other, and how important can this connection be. Explain what an ecosystem is.

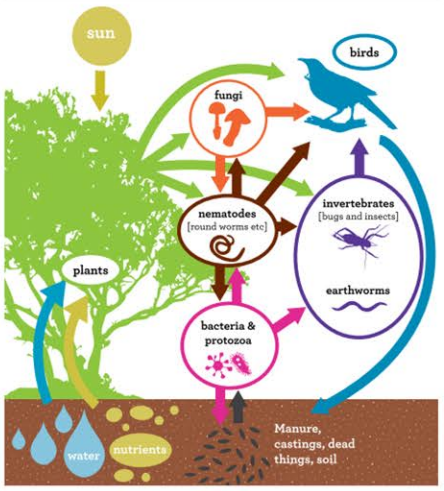
Growing: (See examples in "Resources/References".)
Example: The learners are in a circle. They are given cards with names of living or non living natural entities. They are asked to embody them. Everybody is introducing theirselves as this entity (followed by a movement or sound). Then the facilitator, who is a tree, tosses the ball of yarn to one random participant (representing for example a bird). The facilitator says: "I am a tree. What are you?", the participant replies "I am a bird". Then the person that tossed the thread asks. "What do you need me for?". Then the learners can all brainstorm on how they are linked. Then the participant with the yarn in their hands tosses the ball to another participant, and that process is repeated. After all learners hold the yarn, the first player tells a short story about how they are suddenly not present in the system anymore. (eg. somebody cuts the tree). They let go of the yarn and fall on the ground. The player that was firstly connected to the tree then lets go of the rope and falls on the ground. The same thing is repeated until there is no web anymore.



Harvesting: Reflection circle.

Tips: It is good to have cards ready with the entities/ creatures. Good example of entities are: tree, spider, mouse, river, soil, sun, rain, grass, ant, bird.
The ideal group size is 8-12 people.

Resources/References:
https://www.scouts.org.uk/activities/web-of-life/
https://www.doc.govt.nz/get-involved/conservation-activities/web-of-life/ (source for image on the right)



WILD AUTUMN

Learning goals:
Learn about the role of the funghi, how to differentiate some species, observe nature with kindness

Materials needed:
Magnifying glass pot, spoons, cards-flyers or posters to determine mushroom species, small mirror

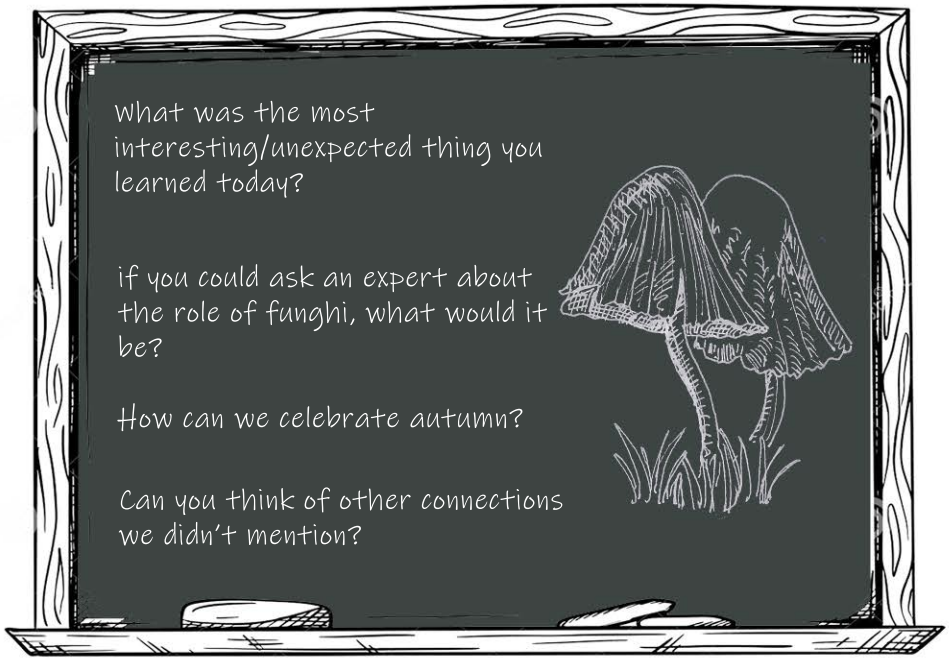
Location:
Not specific

Description

Sowing: Ask the learners open-ended questions about what autumn is for them, how they perceive the transitioning/cycling of seasons and the importance of this process. Ask about the role of funghi. Tell stories (see resources) about how we humans have perceived funghi throughout the centuries and facts about the role of funghi in the web of life. Could life exist without them? When did they begin to exist?

Growing: show in a poster/whiteboard the different parts of mushrooms. After that go for a mushroom hunt! Learners walk around with a small mirror with the assignment to find as many different mushrooms as possible, using the mirror to see if the mushrooms have lamella or pores/tubes. If there are any mulched paths with wooden chips they can look there to find funghi hyphae. At this point they can do the assignments mentioned in the activity "Wild tour".

Harvesting: convene in the ecoliteracy zone and ask reflective questions such as:



Tips: Ideally this is done in small groups. You can give the learners the assignment to pick one species of funghi,and present it using various art methods in the end of the season to the rest. An interesting task is to try to imagine life as described by a mushroom. How different is it from the folktales and traditions associated with them?

Resources/References:
This activity was inspired from the learning materials of the Voedselbos Vlaardingen.
Onine material about the traditions and folk tales related to funghi (*Fungi, Folkways and Fairy Tales: Mushrooms & Mildews in Stories, Remedies & Rituals, from Oberon to the Internet,* openjournals.wsu.edu, *Fungi, Folklore, and Fairyland,* publicdomainreview.org), and about the nature and importance of funghi (britannica.com/science/fungus).

WORLD OF BIRDS

Learning goals:
Learn about the roles and importance of birds in different ecosystems, the rules and tricks of birdwatchers, some birds' names and characteristics

Materials needed:
Binoculars, printed material (Birding Rules, Bird Cards, etc, see Resources)

Location:
A place and in a time where and when birds are visible.

Description

Sowing: Let the learners guess why are birds important for us and the rest of the life on this planet: some answers are:

- Birds spread seeds (they sometimes drop berries/poop out seeds.
- Birds pollinate plants (in the tropics mainly!)-around 5% of the plants humans use for food or medicine are pollinated by birds.
- Birds are scavengers.
- Birds inspire science.
- Birds eat pests (caterpillars and slugs, rats) -talk about the definition of the word "pest": an animal or insect that causes problems for people eg, by damaging crops.
- Birds are food for other animals (fox, buzzard, cat, kestrel, humans).
- Birds' waste is fertilizing the soil.

After this discussion, hand out small cards with the 9 Birding Rules, known as the Birding Etiquette (see Resources). Those exist because we must visit birding locations well prepared so as to minimize our impact, and maximize safety for anyone (birds included), The rules are:

1 | Distance rule: Keep your distance, don't crowd or chase,
move slowly

2 | Road & Trail rule: Stay on tracks

3 | Rescue code: Resist and call...

4 | Food rule: No baiting & keeping them on a wild diet

5 | Light rule: Toning down the blinding effect

6 | Sound rule: Keep quiet, avoid recordings, minimize pishing

7 | Sighting rule: Share sensibly

8 | No Litter rule: Leave no trace

9 | Engaging rule: Lead by example, challenge when possible, report when necessary

Allow the learners to ask questions. Even if the facilitator does not know the answers that is OK: write questions down to a whiteboard/flipchart and encourage the children to search in the websites (eg those found in the Resources) for their answers.

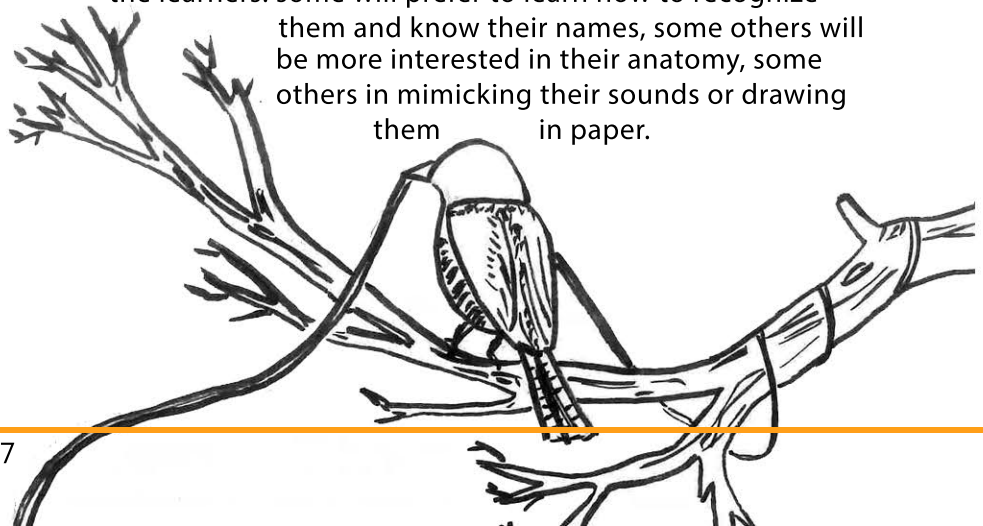
WORLD OF BIRDS (PAGE2)

Growing
Show the learners how to use binoculars. It is good to use first an unmoving spot close to the location.
Example of practicing method: have some bird cards (picture of birds and species name) and stand in a distance. Have the learners to read the cards from a distance.
After that a free session of birdwatching and identification can take place.

Harvesting
If we could ask something to an experienced birder, what would that be?
If we could ask something to a bird living here, what would that be?
Is it possible that birds' lives are altered by humans in this area?
How is light pollution affecting birds life and migration routes?
What should you take with you when you begin a birdwatching trip?

Give out materials from the resources (and more) to inspire the learners to do their own research at home.

Tips: It is important to take into account the divergent interests of the learners: some will prefer to learn how to recognize them and know their names, some others will be more interested in their anatomy, some others in mimicking their sounds or drawing them in paper.



Resources/References:
This activity was inspired from the learning materials of the Voedselbos Vlaardingen.

Onine material useful for the facilittors:

The Birding Etiquette:
https://www.earthwiseaware.org/etiquette/species-habitats-focused-etiquettes/the-birding-rules/

A guide into drawing birds:
https://johnmuirlaws.com/drawing-birds/

A guide into listening: *See activity "Soundscapes"*

Interactive games and applications that teach about birds' anatomy, song, evolution
https://academy.allaboutbirds.org/learning-games/

Teaching resources from Cornell Lab:
https://www.birds.cornell.edu/k12/teaching-resources/

18 Fun Facts About Birds For Kids:
https://africafevers.com/18-fun-facts-about-birds-for-kids-an-oversight/

Basics on migration
https://www.allaboutbirds.org/news/the-basics-how-why-and-where-of-bird-migration/

Learn about movement/yoga through birds:
https://www.kidsyogastories.com/bird-yoga/

Learning goals:

Materials needed:

Location:

Description

Sowing:

Growing:

Harvesting:

Tips:

Resources/References:

Learning goals:

Materials needed:

Location:

Description

Sowing:

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Resources/References:

REFERENCES: ACTIVITY ARCHIVES

There are plenty of websites with activity ideas for outdoor play and education, as long as co-creation, environmental and ecological learning etc. Some of them are referenced in this manual. Here's a list of the main ones :

Reimaginary - Re-imagining possibilities for just and ecological societies--
https://www.reimaginary.com/

Howtosmile
https://www.howtosmile.org/

COSI - Center of Science and Industry
https://cosi.org/

Children in Permaculture Database
https://db.childreninpermaculture.com/

Natural History Museum of London
https://www.nhm.ac.uk/

Sharing Nature Worldwide
https://www.sharingnature.com/

NatuurWijs - De natuur als klaslokaal
https://www.natuurwijs.nl/

Earthwise Aware – Nature Conservation as a Way Of Life
https://www.earthwiseaware.org/

Inside-Outside
https://www.insideoutside.org/

EPILOGUE

There are currently multiple initiatives worldwide that promote education similar Ecoliteracy. Hopefully, they will continue to grow and inspire more educators until aspects of this education becomes an integral part of schools and other formal institutions, making it accessible to more people.

This is crucial in this world we are living in. Only when we forage a strong connection between people and nature will we raise the awareness that is necessary to act against the looming crisis our planet is facing.

What we -students or educators- need to think well is how to address what is taught—the curriculum—as well as how it is taught—pedagogy—as key factors in revitalizing and transforming education. How could we incorporate play in education and science, as a functional part of knowledge that shapes what we want to be as professionals and as people; people that experiment, doubt and cherry-pick from the rules, limits, ideas, and practices from the world around them. People that dare to face the wilderness around them, and dare to be "audience to conversations in a language not our own" (Kimmerer, 2015).