A Nature Play Programme

for Children with Autism Spectrum Disorder

FACILITATOR'S TOOLKIT



This toolkit was developed from a research study (NHG DSRB Ref: 2022/00728) that evaluated a nature-based intervention for children with Autism Spectrum Disorder (ASD). It translates key findings from the study into practical strategies for early childhood intervention.

While nature-based therapeutic programmes are well established for neurotypical children, their application for children with ASD—particularly in tropical environments such as Singapore—remains limited. The six-week programme developed collaboratively by the National Parks Board (NParks), the National University of Singapore (NUS), and the National University Hospital (NUH) offers early evidence of enhanced well-being among participating children with ASD.

This toolkit aims to guide professionals working with young children, particularly those with ASD, in incorporating nature play into therapeutic and developmental programmes, while also serving as a supportive resource for caregivers seeking to extend these practices into everyday home and community settings.

NUS National University of Singapore

NUHS National University Health System

NATIONAL PARKS

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National Parks Board (NParks)
Dr Angelia Sia, Co-Investigator of the research study, and Kenneth Khoo contributed to the development and implementation of the intervention, bringing expertise in nature programming and environmental design.

National University Hospital (NUH)
The NUH Occupational Therapy team—Ms Tai Yuen Ling, Esther; Ms Seow Sze-Yin, Stephanie; and Ms Michelle Lee—contributed their expertise to the design and refinement of the Nature Play Programme. Their deep understanding of therapeutic interventions for children with special needs ensured that the programme is inclusive, developmentally appropriate, and responsive to the diverse needs of children with ASD.

Specialists
Ding Kian Seng, Forest Therapy Guide, Mental Wellness Coach, and Autism Exercise Specialist, developed adaptable, sensory-friendly activities that supported exploration, play, and self-regulation in nature for children with autism. Koh Phey Serh Maria, Physical Education Teacher (SPED), adapted nature-based experiences to diverse sensory and motor profiles, helping ensure that all children could engage meaningfully in movement, play, and nature within the programme.

Caregivers' Reflections On The Programme

"My child enjoyed group play the most... because the activities were fun and engaging.

"The team has helped me gain confidence in handling my son in the garden.

"My child has greater appreciation for diverse nature activities.

"My child is at ease with nature, which we had never seen before. We've also noticed a boost in his concentration and behaviour.

"My child enjoyed the child-led activities that allows him to experience tactile feel of environment.

"He can now engage better with others without guidance and prompting.

"The Nature Play Programme was beneficial because my child is more comfortable with nature and are more at ease socialising with others.

"Yes. The visuals help. The activities are fun and easy to follow.

1 INTRODUCTION

Research has shown that nature-based activities can support children with autism spectrum disorder (ASD) in developing social and emotional skills (Barakat et al., 2019). For example, interacting with nature can encourage children to engage in parallel play (Henniger, 1993), collaborate with others (Crain, 2001), have more positive peer interactions, (Wells and Evans, 2003), and improve emotional regulation (Greenman, 1988).

Recognising the broader developmental benefits of nature for children, the National Parks Board (NParks) has established nature playgardens (NPG) across Singapore, offering all children opportunities to play in environments shaped by natural elements and to build deeper connections with the outdoors.

These purposefully designed spaces draw inspiration from natural landscapes, incorporating features such as logs, rocks, plants, and water to recreate the sensory richness of the outdoors. Grounded in the Biophilia hypothesis—which proposes that humans have an innate affinity with nature (Kellert & Wilson, 1993)—nature playgardens invite children to engage directly with natural elements, rather than relying on the fixed structures and predetermined uses typical of conventional playground equipment. These hands-on, multi-sensory, and child-led experiences foster creativity, independence, and emotional development through unstructured play (Taylor et al., 2002).

To explore the developmental benefits of engagement in nature playgardens, the National University of Singapore (NUS), in collaboration with NParks and the National University Hospital (NUH), co-developed a 6-week pilot intervention for children with autism. The programme demonstrated measurable benefits for both children with ASD and their caregivers. Grounded in occupational therapy principles, the intervention leverages the sensory-rich and supportive environment of nature playgardens to facilitate meaningful and purposeful engagement.

During the sessions, parent-child dyads participated in guided play activities together. Parental involvement was one key component of the intervention, aimed at enhancing the quality of caregiver-child interactions through responsive and attuned engagement during play. The intervention also sought to help caregivers develop greater awareness of their child's sensory and emotional needs, equipping them with strategies to support regulation and engagement at home. As a result, caregivers would be better able to provide consistent and supportive interactions, strengthening their children's developmental outcomes. Specifically, participating children showed:

- Reduced frequency of emotional outburst and dysregulation
- Improved social interaction
- Improved quality of life
- Enhanced prosocial behaviour

Additionally, caregivers reported significant improvements in their own mental well-being following the programme.

2 ABOUT THIS TOOLKIT

This toolkit was developed to translate key findings from the study into practical strategies for early childhood intervention. It aims to support professionals working with young children—particularly children with ASD—in integrating nature play into therapeutic and developmental programmes, while also serving as a useful resource for caregivers seeking to apply these approaches in everyday contexts.

Specifically, this toolkit aims to help readers:

- Support children's emotional regulation and social engagement through nature-based experiences
- Foster positive developmental outcomes by utilizing sensory-rich, child-led play in natural environments
- Enhance family involvement by providing caregivers effective approaches to support their child's growth and well-being

The toolkit includes:

- Core principles underlying the nature-based intervention
- An overview of the structured 6-week programme
- Step-by-step guidance to implementing the activities
- Printable materials and templates to support facilitation and caregiver involvement

3 GUIDING PRINCIPLES OF THE NATURE PLAY PROGRAMME:

Dir®Floortime Principles and Functional Emotional Developmental Capacities

The nature play intervention was grounded in occupational therapy principles, drawing on the DIR®Floortime Model (Greenspan, 1989) and play-based principles for children with ASD. The Functional Emotional Developmental Capacities (FEDC), developed by the International Council on Development and Learning, was incorporated to help caregivers better understand and support their child's development.

What is DIR®Floortime?

DIR®Floortime (Greenspan, 1989) is a play-based therapy that helps children, especially those with ASD, build important social, emotional, and communication skills through meaningful interactions with adults or caregivers in a supportive environment. In DIR®Floortime, adults follow the child's lead during play—getting down on the floor, joining their activities, and responding to their interests and emotions—while gently encouraging them to interact, solve problems, and try new things. The principle has been found to effectively improve interpersonal relationships, communication, and adaptive patterns of behaviour among children with ASD (Liao et al., 2014).

Play is an important occupation of children's lives and has been found to affect their emotional development, social interaction, and problem-solving skills (Hess, 2020). Hence, therapeutic play could be important for children with ASD (Divya et al., 2023).

DIR®Floortime (Greenspan, 1989) provides a structured framework for conducting sessions that foster skills such as problem-solving and building meaningful connections with others (Godino-láñez et al., 2020).

Core Principles of DIR®Floortime:

1. Observe and assess the child's current emotional and sensory needs
2. Follow the child's needs and join at his developmental level
3. Encourage new ideas and emotions in play
4. Wait and give the child time to respond to comments and gestures from caregiver and facilitators

What is Functional Emotional Developmental Capacities (FEDC)?

The FEDC framework (ICDL, n.d.), grounded in the principles of DIR® Floortime (Greenspan, 1989), provides a developmental framework for understanding children's emotional, social, and cognitive growth. The first six FEDCs form the foundation for lifelong learning, relationships, and self-awareness—helping children connect with others, express emotions, and develop communication, motor, and thinking skills.

While these milestones often emerge naturally, children with ASD or other developmental differences may need more time and support. Each capacity builds sequentially, progressing from basic awareness and shared attention to more complex abilities such as problem-solving, pretend play, and logical thinking.

Functional Emotional Developmental Capacities (FEDC)



Figure 1. Functional Emotional Developmental Capacities

4 SUPPORTING THE SENSORY NEEDS OF CHILDREN WITH ASD

Children with ASD often have unique sensory needs, which are closely related to how they process sensory information. Sensory processing refers to how we receive and interpret information from the world through our senses. While most people are familiar with the five main senses—sight, hearing, smell, taste, and touch—there are additional senses that play a vital role in how children experience their bodies and surroundings:

- **Proprioception**
  A child's sense of body awareness, helping them know where their arms, legs, and other body parts are, even without looking.
- **Vestibular Sense**
  Supports balance and movement, allowing children to sense whether they are upright, moving, or spinning.
- **Interoception**
  The awareness of internal bodily states, such as feeling hungry, thirsty, or needing the toilet.

Sensory experiences vary greatly from person to person because each individual has different levels of sensitivity to sensory input. **Dunn's Model of Sensory Processing** (2002) helps explain why these individual differences in sensory experiences occur:

Dunn's Model of Sensory Processing (2002)	
1. Neurological Threshold: This refers to how easily someone notices and reacts to things happening around them.	
Low Threshold	**High Threshold**
The child notices even small changes or sensations easily. They may become overwhelmed or react quickly to things like loud noises or bright lights.	The child needs stronger input to notice things. They may not respond to their name being called or might seem "tuned out."
2. Self-Regulation: This is about how children manage or respond to sensory experiences.	
Active Strategies	**Passive Strategies**
Some children use active strategies to manage their environment. For example, covering their ears or moving to a quieter space.	Others use passive strategies, meaning they don't try to change their environment even if it bothers them. They might just get upset or withdraw instead.

These variations in how individuals respond to sensory stimuli give rise to four distinct patterns of sensory behaviour:

Poor Registration
Children who don't easily notice what's going on around them and don't try to seek out more stimulation (may seem quiet or daydreamy).

Sensory Seeking
Children who need a lot of sensory input and actively seek it out (e.g., love jumping, touching, spinning).

Sensory Sensitive
Children who notice sensory input easily but don't try to manage it, which can lead to stress or meltdowns.

Sensory Avoidant
Children who are very sensitive and try to avoid certain sensations (e.g., covering ears, avoiding crowded places).

Being able to identify a child's sensory behavioural patterns can support the regulation of their emotions and enhance their understanding of the world around them. These indicators can help determine how a child reacts to different kinds of sensory input, enabling you to better understand what calms or overwhelms a child.

This awareness can help to:

- Spot early signs of distress
- Anticipate triggers before they escalate
- Support the child in ways that feel safe and comfortable for them

By paying attention to these sensory behaviours, one can be better prepared to create a supportive environment that respects the child's boundaries and helps them thrive.

Two key principles essential for supporting a child's sensory needs:

- **Habituation**
  This is a child's way of "getting used to" things. When a sound, smell, or touch happens again and again, and it is not important or upsetting, their brain learns to ignore it. *For example, after a while, they may stop noticing the ticking of a clock or the hum of a fan.*
- **Sensitisation**
  This is when the child becomes more aware of something because their brain thinks it's important. *For instance, if a loud bang scares them, they might become extra alert to similar sounds afterwards.*

The table below helps you identify the child's behavioural patterns, and the corresponding behaviour management and activity-based strategies to help them habituate and desensitise them to the new environment.

Sensory Pattern					
	Neurological Threshold	**High Threshold** *Needs stronger input to notice things.*		**Low Threshold** *Notices even small changes or sensations easily.*	
	Self-regulation	**Passive**	**Active**	**Passive**	**Active**
	Response Type	**Poor Registration**	**Sensory Seeking**	**Sensory Sensitive**	**Sensory Avoidant**
	Typical Behaviours	1. Unaware of surroundings 2. Misses details (e.g., food on face) 3. Prefers slow-paced, quiet play 4. Does not notice when they drop items	1. Moves and fidgets constantly 2. Jumps between activities 3. Seeks strong smells, noises, or tastes 4. Easily excited	1. Overreacts to noise, touch, or smells 2. Becomes distracted easily 3. Finds it hard to sit still or focus	1. Struggles with adapting to changes 2. Displays emotional outbursts 3. Resists new activities and sensations 4. Becomes anxious or upset easily 5. May withdraw from group or refuse participation
	Behaviour Management Strategies	1. Allow big movements 2. Set clear boundaries with visual schedules 3. Create calming spaces for regulation		1. Introduce sensory input gradually 2. Keep environment predictable and calm 3. Give the child extra time to process changes 4. Use visual schedules and repeat routines for predictability	
	Activity-based Strategies	1. Use materials that encourage hands-on exploration 2. Allow them to get messy 3. Offer active play opportunities		1. Use gloves, tongs, or tools for nature play 2. Reassure with wipes and towels 3. Let the child observe group activities before joining 4. Allow physical distance from group during group activities	

5 FACILITATING THE CHILD'S NATURE PLAY EXPERIENCE

Facilitating using DIR®Floortime Principles

To optimise the outcomes of this programme, it is important to keep several DIR®Floortime (Greenspan, 1989) guiding principles in mind throughout its implementation:

DIR®Floortime Principle	What to do	Purpose
Understand the Child's Needs	Observe how the child is feeling and responding to the environment at the start of each session. Notice their emotional state and sensory preferences.	Helps adapt activities to match the child's unique way of engaging with the world.
Follow the Child's Lead	Let the child take the lead during play and join in based on what interests the child.	Helps build trust and encourages the child to stay engaged and express themselves naturally.
Deepening Play and Emotions	Introduce new ideas and emotions.	Challenges them to explore beyond their comfort zone while feeling supported.
Encouraging Two-Way Interaction	Wait for the child to respond, whether through words, actions, or gestures. Respond in a way that conveys interest and acknowledge their response.	This ensures interactions are reciprocal and that the child's gestures and comments are acknowledged and built upon, supporting both social-emotional growth and deeper engagement.

Strategies for Facilitating the Nature Play Intervention

Children with ASD often tend to respond better to consistent routines and predictable environments. Sudden changes to their environment or schedule may result in anxiety, dysregulation, or reluctance to participate. As such, preparing the child beforehand is key to creating a safe, positive, and engaging experience during the nature play programme.

Facilitators can take the following preparatory steps:

Strategy	What to do
Introduce the activities and sequence	1. Use supports such as visual schedules or picture cards to show the order of activities. 2. Let the child know what to expect for each activity. Explain the rules, movements, and materials required to carry out the activity.
Familiarise the child with the environment	1. Encourage parents to bring their child to the nature space prior to the session if their child is sensory-sensitive or anxious in new spaces. 2. Allow the child to explore the space at their own pace within set boundaries, while ensuring safety.

To maximise the benefits of nature-based activities, it is important to scaffold the child's experience in ways that promote engagement, safety, and positive emotional outcomes. The following strategies can be integrated into session planning and facilitation:

Strategy	What to do	Purpose
Set expectations	Communicate the activity rules and expectations clearly prior to starting.	Helps establish predictability and reduce anxiety.
Utilise visualisations	Implement tools such as visual schedules or transition cards.	Supports understanding and eases transitions between activities.
Provide clear, positively framed instructions	Use simple, direct language that emphasises what the child should do *(e.g., "walk slowly" instead of "don't run"; "use gentle hands" instead of "don't hit")*.	Ensures understanding and clarity of instructions.
Encourage active recall	Ask the child to repeat key instructions or steps.	Reinforces comprehension.
Offer targeted praise	Reinforce desired behaviours with specific, strengths-based feedback *(e.g., "Great job waiting your turn" or "I noticed you tried something new—well done for being brave")*.	Increases self-confidence and mastery of behaviour through positive reinforcement.

Strategies to Calm Over-active and Dysregulated Children

Children may become overly active and dysregulated during nature play. To help calm the child, you can employ these strategies:

Strategy	What to do
Breathing exercises	Introduce breathing techniques early during sessions, ideally during a calm moment rather than when the child is already dysregulated. Practice the breathing exercises before conducting the nature sessions to help the child understand the purpose of these exercises as a calming strategy. Encourage parents to teach their children these breathing exercises before the session.
Redirecting emotions	Use a calm and firm voice and label the child's emotions clearly and calmly. *(e.g., "Josh, you are getting too excited, let's calm down by...")*
Reducing excessive stimulation	Remove excessive stimulation by moving the child to a quieter spot or taking them on a short walk.
Increasing focus	Encourage the child to attune themselves to their surroundings by observing an interesting animal, picking up a rock or plant that interests them or listening to and describing the different sounds in the playgarden. Conduct breathing exercises. Engage in deep pressure activities such as deep firm massages. Get the child to hold something heavy while listening to instructions.

Children can also become disengaged and bored during nature play. To help engage the child, you can employ these strategies:

Strategy	What to do
Increasing interest	Use a more animated voice and tone when giving instructions. Move the child away from distractions when explaining instructions. Include frequent movement breaks e.g., jumping jacks and water breaks.
Ensure comprehension	Check to confirm that the child heard and understood your instructions.

6 CONDUCTING THE NATURE PLAY PROGRAMME

Before conducting the programme, it would be helpful to habituate and sensitise the child to the environment and materials. This ensures the child feels prepared for the session and understands the purpose of each activity.

To do this, you can:

- Explain that they will be visiting a park for play and exploration, using visuals or images where helpful.
- If possible, before the session, bring the child to the park to help them become familiar with the environment.
- Introduce the materials that will be used during the session.
- Familiarise the child with regulation strategies such as breathing exercises or taking a break.

Where to Conduct the Nature Play Programme

Nature play may be conducted in a suitable natural space–subjected to the child's sensory profile and ability to adapt. Nature playgardens offer thoughtfully designed and sensory-rich environments that nurture holistic child development. Grounded in biophilic principles, these spaces incorporate natural materials, varied terrain, and diverse plant and wildlife features to inspire imaginative, physical, and social play. Unlike traditional playgrounds, nature playgardens promote open-ended exploration and support emotional regulation through immersive nature-based experiences. Their inclusive and accessible design enables children of all abilities, including those with ASD, to engage meaningfully with nature at their own pace.

The nature play programme can be implemented in nature playgardens or other similar natural spaces. In this study, sessions were conducted in Jacob Ballas Children's Garden at the Singapore Botanic Gardens. By delivering the nature play programme in these purpose-built settings, facilitators can provide safe, engaging and enriching experiences that deepen children's connection to the natural world.

Key Features of Nature Playgardens

The following table are some of the features that can be found in nature playgardens across Singapore.

NPG Feature	Description	Relevance to Nature Play Programme
Sensory Zones	Use of textures, smells, sounds, colours from plants and natural materials.	Supports sensory integration and emotional regulation in children with ASD.
Loose Materials	Sand, bark, leaves, branches for open-ended use.	Encourages creativity, fine motor skills, and child-led exploration.
Topography Features	Slopes, dry rocky streams, mounds, and forest patches.	Enhances gross motor planning and imaginative play (e.g., rolling, climbing).
Natural Elements	Butterfly-attracting plants, bird feeders, log piles, caterpillar habitats.	Sparks curiosity and nurtures emotional connection to nature (biophilia).
Constructed Natural Play	Treehouses, log steps, climbing structures, water features using natural form.	Provides physical challenge while maintaining harmony with nature.
Sheltered Zones & Refuges	Spaces with shade, canopies, or tree clusters.	Allows retreat for children feeling overstimulated. Helps manage sensory input.
Imaginative & Role Play	Features like huts, nature kitchens, or forts.	Facilitates social and symbolic play for children with different engagement levels.
Exploration Trails	Pathways connecting different play nodes, some with hidden or surprise elements.	Builds independence and exploratory confidence.
Inclusive Design	Barrier-free access, multiple entry/exit points, space for assistive mobility.	Ensures accessibility for all developmental and physical needs.
Microhabitats	Forest, riverine, and coastal vegetation zones.	Provides educational opportunities and sensory-rich experiences.

Nature Playgardens in Singapore

There are multiple nature playgardens for public use across Singapore. More information can be found on the NParks website.
https://www.nparks.gov.sg/visit/activities/fun-children/nature-playgardens

Alternatively, you can scan this QR code to access the NParks website.

7 OVERVIEW OF NATURE PLAY PROGRAMME SESSIONS

Structure of Each Session

Each session in the nature play programme consists of four key components:

Component	Recommended Duration	Purpose
Warm-up	20 minutes	Orienting the child to the physical space, ground rules, calming exercises, and sensory environment to reduce novelty-related anxiety and primes the child for engagement.
Nature Play	30 minutes	Engage in child-led, exploratory play rooted in DIR®Floortime principles (Greenspan, 1989) to promote creativity, shared attention, and emotional connection.
Group Play	30 minutes	Facilitate social interaction with peers or caregivers to build both intrapersonal (self-awareness, emotional regulation) and interpersonal (turn-taking, cooperation) skills.
Cool-down	10 minutes	Promote emotional literacy and regulation by conducting post session check-ins and reflections. Repeat calming techniques to support transition and regulation after active engagement.

Preparing the Child for Each Session

Preparation is key to helping the child feel secure, confident, and ready to participate meaningfully. For children with ASD, unfamiliar settings or changes in routines can trigger anxiety and reduce engagement. Taking a proactive approach allows the child to build mental expectations, increasing their sense of control.

Professionals and caregivers can support the child by:

- Using a visual schedule to outline the session's structure and provide predictability.
- Referring to the visual schedule during transitions between activities.
- Describing upcoming activities with simple, concrete language *(e.g., "We will go to the garden to water the plants with a sponge")*.
- Briefly explaining sensory aspects of the environment *(e.g., "You might feel sand under your feet or hear birds chirping")*.

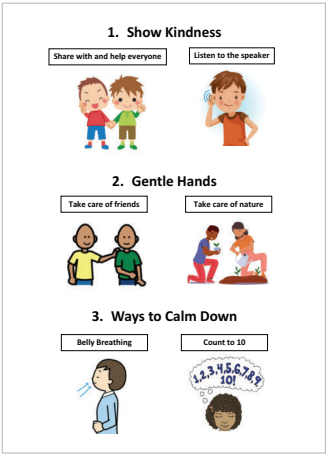
Effective preparation can help reduce behavioural distress, promote regulation, and increase the child's openness to engaging with nature-based activities in a positive and meaningful way.

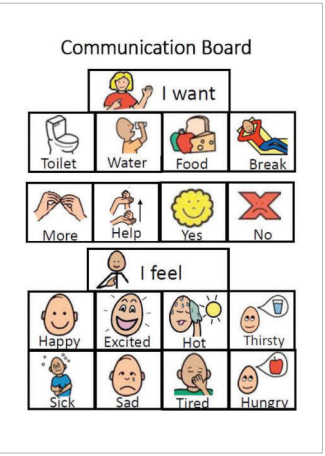
8 SESSION ACTIVITIES

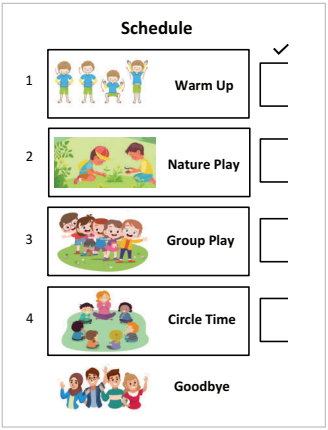
This section outlines key session materials and activity components that help create a structured, engaging, and supportive experience for the child.

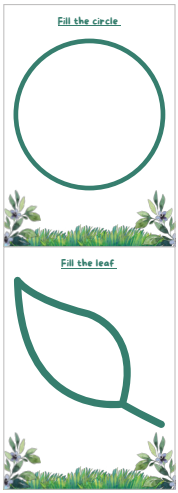
Explorer Kit

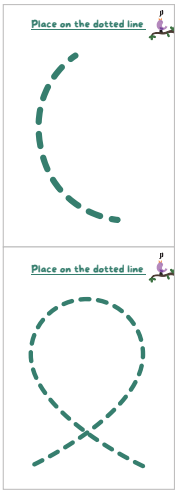
This typically consists of a visual schedule, communication board, and nature play templates, along with any additional materials required, such as stationery or a magnifying glass. The materials in the explorer kit should introduce the child to the session's activities, outline ground rules, facilitate communication, and support the conduct of nature play activities.















Session Components

A. Warm-up Activities

Warm-up activities provide an important transition for children entering a new environment. They help the child feel safe, grounded, and regulated while adjusting to unfamiliar surroundings and sensory input. By easing into the space, children are more likely to engage meaningfully and with less resistance in the structured components of the session. Warm-ups also create valuable opportunities to build rapport and connection between the child and the caregiver or facilitator before moving on to more complex tasks.

While nature playgardens provide rich sensory and exploratory benefits for children, these spaces can become crowded during peak periods such as evenings, weekends, and school holidays. For some children, busy environments may be overstimulating. Look out for a low-stimulation space where the child can retreat when feeling overwhelmed. In this space, professionals or caregivers can guide the child through simple calming strategies such as breathing exercises, slow-paced walking, or gentle stretches until they are ready to rejoin the group.

Warm-up activities are designed to target the early functional-emotional developmental milestones (FEDC Levels 1–3), which include:

- **FEDC 1 – Self-regulation and interest in the world**
  The ability to remain calm, self-regulated, and maintain shared attention
- **FEDC 2 – Engagement and relatedness**
  Establishing engagement and emotional connection with others
- **FEDC 3 – Two-way purposeful communication**
  Initiating basic intentional communication and social interaction



Figure 2. FEDC 1 to 3

To help the child develop FEDC milestones 1 to 3, these are some strategies:

FEDC	Suggested Steps for Facilitators:
Self-regulation	Achieve co-regulation by taking note of the child's sensory preferences and attentively responding to their cues. Which senses keep them calm and get their attention? **SMARTEST Strategy** Simplify your language Movement – slow down your action Affect – match the child's affect Reflect the child's emotional intent Tone of voice – modulate for the situation Eyes and ears – listen with both Stop – wait for the child to initiate Together – join the child in their intent Support regulation by providing calming strategies, for example, time out corner, deep pressure, fidget toys, deep breathing. Do not force the child if he is not ready (i.e. NO hand-over-hand)

Engagement	Observe the child's interest and follow their lead. Explore together using different senses, for example, using touch, sight, hearing to explore the park. Watch, Wait, Wonder. Be persistent without forcing the child.
Two-way communication	Respond to their initiation/intentions by observing their actions/ gestures. The child may point or demonstrate, and you can respond by offering options and provide choices.

Examples of Warm-up Activities
The following are a collection of suggested warm-up activities that can be implemented before each nature play session to help the child regulate and prepare for meaningful participation.

A1. Breathing Exercises

Activity	Recommended Location	Materials	Activity Goals
Breathing Exercises	Quieter area	Leaves	FEDC 1: Self-regulation

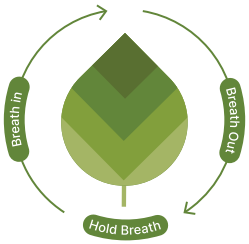


Figure 3. Leaf Breaths

Leaf Breaths

1. Together with the child, find a leaf with a few ridges.
2. Guide the child to place a finger on the stem of the leaf and slowly trace the leaf.
3. Breathe in while tracing the left side of the leaf and breathe out while tracing the right side of the leaf.
4. Repeat leaf breaths as many times as necessary.

Q What if the child refuses to touch the leaf or participate in the activity?
A Children with ASD may experience sensory sensitivities or anxiety around new materials. If a child seems hesitant, offer alternatives such as tracing the leaf using a familiar and comfortable object (e.g., pencil) tracing a paper cut-out of a leaf, using a laminated leaf card, or even drawing a leaf in the air. Avoid forcing participation and model the activity calmly and invite the child to join when they're ready.

Q How long should we do the Leaf Breaths for?
A There is no fixed duration, and you can let the child guide the pace. Some may only manage one or two breaths, while others may want to do it several times. The goal is to help the child feel calm and centred. Watch for signs of increased regulation (e.g., slowed breathing, relaxed posture) as cues to move on.

Balloon Breaths

1. Tell the child to imagine that their belly is a balloon.
2. Guide the child to place their hand on their belly to feel it rising and falling
3. Tell the child to take a deep breath in through their nose, filling the "balloon", then hold their breath for 2 seconds.
4. Then, ask them to breathe out through their mouth to deflate the balloon.
5. Repeat balloon breaths as many times as necessary, usually around 3-5 times.

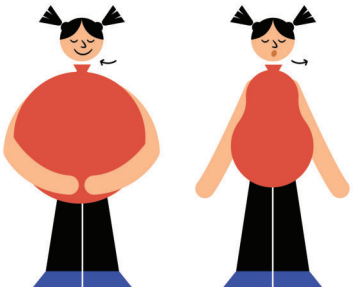


Figure 4. Balloon Breaths

Q What if the child doesn't understand the balloon imagery?
A Some children may struggle with abstract concepts. You can support understanding by using a visual aid, such as a picture of a balloon or a real balloon for demonstration. You can also say, "Pretend your belly gets bigger like a balloon when you breathe in, and smaller when you let the air out."

A2. Stretching Exercises

Activity	Recommended Location	Materials	Activity Goals
Stretching Exercises	Quieter area	Leaves	FEDC 1: Self-regulation

After conducting the breathing exercises, engage in some simple stretches to warm up the child's body for the session. If conducting the session in a group, you can use this time for self-introductions. Invite each child to share their name, school, favourite subject in school, favourite animal and favourite hobby.

Tree Stretch

1. Stand tall with feet flat on the ground.
2. Reach both arms slowly up to the sky like branches.
3. Take a deep breath in as you reach up.
4. Breathe out as you bring your arms gently down like falling leaves.
5. Repeat 3 times.

Turtle Stretch

1. Sit cross-legged or with legs stretched forward.
2. Gently bend your body forward and reach toward your toes or the ground.
3. Encourage the child to "hide like a turtle" in their shell.
4. Hold for a few seconds, then slowly roll back up.
5. Repeat 2–3 times.

Rainbow Arms

1. Stand with feet shoulder-width apart.
2. Raise one arm over your head and lean to the opposite side to “make a rainbow”.
3. Hold for 5 seconds, then switch sides.
4. Repeat 2 times each side.

A3. Making Leaf Satay

Activity	Recommended Location	Materials	Activity Goals
Making Leaf Satay	Spacious area with fallen leaves and sticks	Leaves Branches	FEDC 1: Self-regulation FEDC 2: Engagement FEDC 3: Purposeful communication - sensory exploration, motor planning, bilateral coordination

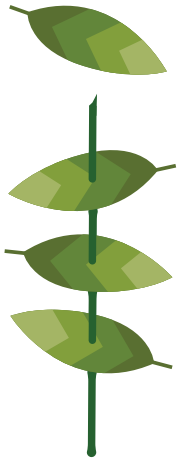


Figure 5. Leaf Satay

1. Together with the child, find a fallen stick and collect fallen leaves.
2. Place the leaves one by one through the stick.

Q What if the child doesn’t want to touch leaves or sticks?
A Some children with sensory sensitivities may be hesitant to touch natural materials. Offer alternatives like using gloves or tongs. Let the child observe first and offer choices like, “Would you like to pick the leaf or hold the stick?”

Q The child is more interested in collecting or hoarding leaves than the activity. Is that okay?
A Yes. The goal of the activity is purposeful engagement with nature. If the child is exploring and enjoying the materials, allow space for curiosity. You can gently guide the activity by saying, “Let’s try making a satay stick with some of the leaves you’ve found.”

Q What if the child breaks the stick or crumples the leaves?
A Remember—the purpose is engagement. Allow the child to explore natural materials. Frame it positively by saying, “That one was very dry. Let’s find one that works better.” This can also be a moment to talk about nature’s textures and fragility.

A4. Bean Bag Race

Activity	Recommended Location	Materials	Activity Goals
Bean Bag Race	Spacious area with different types of terrain such as log beams, maze gardens, tree stumps, bridges	Bean Bags Tray	FEDC 1: Self-regulation FEDC 2: Engagement FEDC 3: Purposeful communication - motor planning, motor coordination

1. Select two points in the garden, a starting point and an ending point.
2. Place marker/tray at the ending point.
3. Get the child to bring the bean bag from the starting to the ending point.
4. Movement variations, such as jumping like a bunny or galloping like a horse, can be introduced to encourage imaginative play.
5. The bean bag may be substituted with other items such as plastic bottles.

Q What if the child refuses to join the race?
A Some children may need time to warm up or feel unsure about group activities. Start by modelling the activity yourself or invite them to be the "starter" who says "Ready, set, go!" Giving them a sense of control or an observing role first can reduce pressure and build confidence.

Q The child doesn't want to carry the bean bag. What can I do?
A Allow the child to choose a preferred item to carry instead (e.g., a soft toy, leaf, or pine cone). You could say, "Would you like to carry a leaf instead of the bean bag?" Offering choices increases engagement and honours sensory preferences.



Figures 6. Bean Bag Race

Q The child is very active and runs off the track or around the garden. How should I respond?
A Use visual markers (e.g., cones, coloured cloths) to define the path clearly. Offer simple cues like, "Let's go from the red tray to the green leaf!" If needed, gently guide them back with encouragement and praise when they follow the path.

Q What if the child gets frustrated or has an emotional outburst during the activity?
A Pause the activity and offer a break in a quiet spot. You might say, "Let's take a break together. Would you like to do some Leaf Breaths?". Once the child seems calmer, gently check in: "Are you ready to try again?" and reintroduce the activity with clear steps and encouragement.

A5. Nature Walk

Activity	Recommended Location	Materials	Activity Goals
Nature Walk	Nature space	Magnifying glass	FEDC 1: Self-regulation FEDC 2: Engagement FEDC 3: Purposeful communication - sensory exploration, e.g., small, visual, touch, auditory, movement. Forming connection with the nature

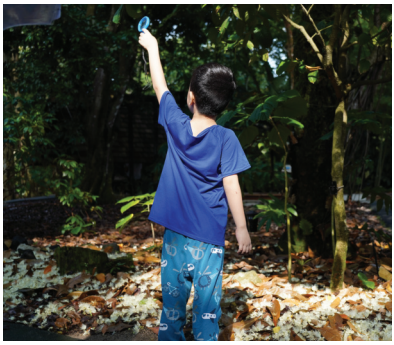


Figure 7. Nature Walk

1. Bring the child on a short, slow-paced walk around the nature playgarden or green space.
2. Encourage the child to use the magnifying glass to explore small details in their environment (e.g., leaves, insects, bark, flowers).
3. Introduce different plants and animals, using simple, descriptive language. E.g., "This is a fern. Feel how soft the leaves are!" and "Look, it's an ant! Where do you think it's going?"

Q When is a good time to use this activity?
A Besides using it for a warm-up activity, this activity is particularly useful as a replacement activity for children who may struggle with the other activities.

Q How long should the walk last?
A Keep the walk short and flexible (10–15 minutes) based on the child's interest and stamina. Some children may prefer brief but frequent walks. Use transitional cues to signal the end: "Let's look for one more flower, then we'll head back."

B. Nature Play Activities

The nature play segment aims to give children the freedom to lead their own play and engagement with nature. Using the DIR®Floortime principles (Greenspan, 1989), you can guide the child as they explore these activities.

Beyond these activities, nature play can also be as simple as taking a walk in a natural environment, like a park or garden. During these walks, encourage the child to observe the sights and sounds of their environment. This also helps the child get used to a new environment, which may be scary and confusing at first.

The nature play activities aim to target children's higher-level thinking, which correspond to FEDC milestones 4 - 6 (ICDL, n.d.):

- **FEDC 4 - Shared problem-solving**
- **FEDC 5 - Use of symbols and emotional ideas**
- **FEDC 6 - Logical thinking and integration of ideas**



Figure 8. FEDC 4 to 6

To help the child to develop FEDC milestones 4 - 6, these are the strategies:

FEDC	Suggested Steps for Facilitators:
4 – Complex communication with shared problem-solving	Create tasks with problems to be solved using communication and interaction by adding an obstacle to the child's goal. Create extra opportunities for interaction and response during simple conversations. Change the problem and the solution within the same activity, so that the child is always learning something new. Take note of the child's frustration as it builds when they encounter challenges. Avoid stepping in with immediate help; instead, offer gentle cues to guide the child rather than providing the answer.
5 – Use of symbols and emotional ideas	Use symbolic, pretend and imaginary play. Add/Create pretend/imaginary ideas, for example, "the tree is dancing because she is feeling happy." Expand/Extend ideas, for example, "this can be used for cooking curry, your daddy loves eating curry, maybe we can..." Add in emotional words, for example, "I think daddy will be very happy if we..." Help the child connect with others in the programme, for example, "what do you think Bryan is doing? Is he sad? What can we do to make him feel better?
6 – Logical thinking and integration of ideas	Ask simple "W" questions (what, when, where, why). Explain the links between ideas, for example, "You put the stick here so that...". Offer possible multiple-choice answers, including a few playful or "silly" options for the child to consider. If the child's responses become piecemeal or fragmented, briefly model confusion and invite them to clarify or organise their ideas.



Figure 9. Common toys for nature play activities

We recommend bringing a bag, tray, container, or pail to store the materials the child collects during the activities, and any artwork they complete. The child may sometimes be hesitant to pick up certain items due to sensory sensitivities. In such cases, gently encourage them to give it a try. If they still feel uncomfortable, you can step in and help by picking the item up for them.

Examples of Nature Play Activities
The following highlights a range of nature play activities that can be implemented.

B1. Nature Play Templates Adventure

Activity	Recommended Location	Materials	Activity Goals
Nature Play Templates Adventure	Spacious area with fallen leaves, flowers, sticks and rocks	Laminated Nature Play Templates Leaves, Sticks, Flowers, Branches, Rocks	FEDC 4: Complex communication and problem-solving FEDC 5: Use of symbols and emotional ideas - nature exploration, eye hand coordination, bilateral coordination, art and creativity

1. Bring printed, and preferably laminated, nature play templates from the explorer kit (or your own versions).
2. Together with the child, collect a variety of natural materials such as leaves, branches, flowers and rocks.
3. Introduce the child to the different nature play templates and follow their lead on which activity they want to engage in.
4. Sheltered areas with access to natural materials should be identified in advance and used during wet weather, allowing the child to continue collecting and using materials to complete the templates.
5. Create situations that can only be solved through lots of back-and-forth communication between you and the child.
6. Help your child use ideas by fostering situation in which feelings or intentions need to be expressed.



Figure 10. Nature play Templates

Q The child fills the template in a way that doesn't match the shapes or suggested items. Should I correct them?
A Instead of correcting them, you can approach the child with curiosity and encouragement. This is because the focus of the activity is creativity, exploration, and sensory engagement, not accuracy. You can say "That's an interesting way to use the leaves!" This supports confidence and imagination.

Q What if the child is fixated on just one item (e.g., only collecting rocks)?
A This is okay, as these items can provide comfort for the child. You can slowly introduce variation by saying, "I wonder what it would look like if we added one leaf to your rock collection?" You can respect their preferences while gently expanding it.

B2. Decorating Nature's Template

Activity	Recommended Location	Materials	Activity Goals
Decorating Nature's Template	Space with fallen natural materials	Printouts Colour pencils Glue Fallen natural materials	FEDC 4: Complex communication and problem-solving FEDC 5: Use of symbols and emotional ideas - nature exploration, eye hand coordination, bilateral coordination

1. Bring printed, and preferably laminated, nature play templates from the explorer kit (or your own versions).
2. Give the child three templates to complete. (a. Find 10 leaves and decorate the mountain; b. Find one leaf the size of this fish; c. Decorate the bare tree, give it some shape).
3. Using natural materials found on the floor, guide the child to decorate the given templates.
4. Sheltered areas with access to natural materials should be identified in advance and used during wet weather, allowing the child to continue collecting and using materials to complete the templates.



Figure 11. Decorating Nature's Template

Q The child struggles to find the right size or shape of natural materials. Should I help?
A Yes, but you should try to support rather than direct. For example, say: "Let's look together for something round like this," or "This one is close—what do you think?" This provides opportunity for shared problem-solving. Use words and express ideas in meaningful way.

B3. Nature Wands

Activity	Recommended Location	Materials	Activity Goals
Nature Wand Making	Spacious area with fallen leaves, flowers, sticks and rocks	Sticks, Leaves, Flowers Tape/blu-tack	FEDC 4: Complex communication and problem-solving FEDC 5: Use of symbols and emotional ideas

1. Together with the child, collect a variety of natural materials such as leaves, branches, flowers and rocks.
2. Place and decorate the stick with the natural materials and sticky tape.
3. Guide the child to use the nature wand to draw on sand/gravel pit. (Expansion of play)
4. Ask/assist the child to imagine what the nature wand can do. (Imaginative play)

Q What if the child doesn't want to use the wand to draw or explore in the sand/gravel pit?
A Offer alternative uses. For example: waving it through the air, using it as a pointer, or simply admiring it as a completed creation.



Figure 12. Nature Wands

B4. Nature Fort

Activity	Recommended Location	Materials	Activity Goals
Nature Fort	Spacious area with fallen leaves, flowers, sticks and rocks	Sticks, Leaves, Rocks	FEDC 4: Complex communication and problem-solving FEDC 5: Use of symbols and emotional ideas - nature exploration, motor planning, sensory exploration, eye-hand coordination and constructive play

1. Together with the child, explore the space for fallen sticks and leaves.
2. Create a self-standing structure with the sticks.
3. Decorate the structure with the fallen leaves and flowers.
4. Ask/assist the child to imagine what the fort can be used for (imaginative play).



Q The child wants to knock the fort down. Should I intervene?
A You can acknowledge the behaviour while setting limits if needed: "It looks like you enjoy knocking it down—shall we build a mini fort just for that?" You can offer a structured alternative or include the child in rebuilding to model persistence and collaboration.

Figure 13. Nature Fort

Q The structure keeps collapsing and the child becomes frustrated. How can I support them?
A Validate their feelings and provide scaffolding by suggesting alternatives (e.g., building against a tree trunk for support). Use encouraging language: "It's okay if it falls. We can try again together. Let's make it stronger this time!"

B5. Sand Play

Activity	Recommended Location	Materials	Activity Goals
Sand Play	Sand pit	Sand toys	FEDC 4: Complex communication and problem-solving FEDC 5: Use of symbols and emotional ideas - sensory play, pretend play when the child is ready, e.g., build a home for the ants

Allow the child to explore and play with the sand using DIR®Floortime principles.



Figure 14. Sand Play

Q What if the child is hesitant to touch the sand?
A Some children with ASD may be sensitive to certain textures. Try offering alternative tools like scoops, tongs, or small containers so the child can interact with the sand without direct contact. Reassure them and allow gradual exposure at their own pace. You may also provide hand wipes or gloves for comfort.

Q How can I support engagement if the child is playing alone?
A Join the child at their level without directing their play. You can narrate what they are doing ("You're scooping a big pile of sand!"), imitate their actions gently, or create playful surprises nearby (e.g., burying a toy) to spark interaction.

Q What if the child begins throwing sand or becomes dysregulated?
A Gently redirect using clear, positive language. For example, say, "Let's keep the sand in the tray so we can all play safely." Offer a calming alternative like smoothing the sand with hands or pressing shapes. If needed, take a sensory break in a timeout corner before returning.

B6. Mud Play

Activity	Recommended Location	Materials	Activity Goals
Mud Play	Sand pit	Water Stick/branch, Flowers, Leaves, Rocks	FEDC 4: Complex communication and problem-solving FEDC 5: Use of symbols and emotional ideas - sensory play

1. Pour water onto sand pit or soil to make wet sand.
2. You can prompt the child to draw letters or numbers in the dirt or sand with a stick. E.g., Can you write your name? What numbers can you write? What other words can you spell?
3. You can incorporate mathematical concepts with simple addition, subtraction, patterns, and shapes. E.g., What is 2 multiplied by 2?
4. Prompt the child to create a creature/person using mud and a variety of natural objects found on the ground. E.g., Pebbles/rocks for facial features, leaves for hair, branches and twigs for the body. Some prompting questions you can use are "How about building a castle or house for them to live in?" "What is your favourite animal? Let's make it!"
5. Utilising the containers/tools provided, you can pretend to be cooking in a kitchen with the child. Add different textured natural objects to enrich the sensory experience. Some prompting questions you can use are "What kind of food would you like to make?" "Shall we bake something!" "Can you find other kinds of natural ingredients to add to your dish?"





Figure 15. Mud Play

Q What if the child avoids touching mud or appears uncomfortable?
A Children with sensory sensitivities may be hesitant with muddy textures. Offer tools like sticks, cups, or gloves to reduce direct contact. Encourage exploration at their own pace. Narrate the sensory experience, for example saying "The mud feels cool and squishy", to help the child process it gradually.

B7. Dough Play

Activity	Recommended Location	Materials	Activity Goals
Dough Play	Space with fallen natural materials	**To make natural play-doh:** 1 cup of flour 1/2 cup of salt 1 cup of water 2 tablespoons of oil 2 tablespoons of crème of tartar Pot, Spatula, Fallen leaves, Flowers (e.g., butterfly pea flower and hibiscus) Sticks, Branches	FEDC 4: Complex communication and problem-solving FEDC 5: Use of symbols and emotional ideas - sensory play, eye hand coordination

Preparation: To make the natural dough, mix all the ingredients into a pot and heat gently. Mix the ingredients until they form a dough ball. Allow the dough to cool and knead for 5 minutes until sough and pliable. Use food colouring to make different coloured dough. Store dough in an airtight container/bag. This can be done indoors with the child.

1. Together with the child, collect a variety of natural materials such as leaves, branches, flowers and rocks.
2. Guide the child to build a monster/item of their choice with the dough.
3. During wet weather, play with the dough indoors and collect natural materials from sheltered areas.



Figure 16. Dough Play

Q What if the child keeps squishing or tearing the dough without making anything?
A You can scaffold play by narrating their actions ("You're pressing the dough flat like a pancake!") and gently invite them to create something when ready ("Shall we make a leaf hat for the dough monster?").

B8. Tracing Nature's Imprints

Activity	Recommended Location	Materials	Activity Goals
Tracing Nature's Imprints	Space with fallen natural materials	Colour pencils Tracing paper	FEDC 4: Complex communication and problem-solving FEDC 5: Use of symbols and emotional ideas - eye hand coordination, sensory exposure

1. Guide the child to find interesting natural surfaces such as tree bark, leaves, flowers and rocks.
2. Place the chosen natural object (bark, leaf, flower, or rock) under the piece of paper.
3. Use colour pencils to rub over the paper and reveal the imprints of trees, leaves, and other natural textures.

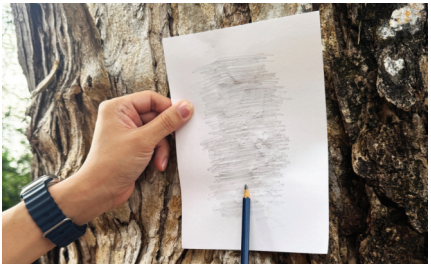


Figure 17. Tracing Nature's Imprints

Q What if the child is not interested in tracing?
A Follow the child's lead and gently scaffold the activity by showing your own curiosity. For example: "Look how bumpy this tree bark is, let's see what it looks like on paper!" You can also let the child choose which objects to trace, giving them a sense of control.

Q What if the child presses too lightly or too hard with the pencils?
A This is a great opportunity to support fine motor development. If pressing too lightly, model stronger strokes and say, "Let's press a little harder to see the lines!" If pressing too hard, demonstrate gentle strokes and say, "Try colouring gently like this, so the paper doesn't tear."

Q How do I support a child with low attention or interest in static activities?
A Keep the activity short and dynamic. Use movement breaks ("Let's go find a rock!"), or combine the tracing with a story ("Let's collect clues from the forest for our nature collection!"). Praise the child's effort rather than the end result to sustain motivation.

B9. Nature Treasure Hunt

Activity	Recommended Location	Materials	Activity Goals
Nature Treasure Hunt	Natural environment	Plant treasure hunt printout Train printout Colour pencils Magnifying glass Glue	FEDC 4: Complex communication and problem-solving FEDC 5: Use of symbols and emotional ideas

1. Bring a printed nature treasure hunt template from the explorer kit, preferably laminated.
2. Guide the child to find these natural items and use the magnifying glass to see more details.
3. Take photographs of the items the child has collected to keep track if needed.
4. After collecting these items, decorate the templates with the items collected.
5. During wet weather, find a sheltered natural space and encourage the child to spot as many different things as they can within the space.





Q What if the child has difficulty staying focused during the treasure hunt?
A Break the hunt into small, manageable steps. Instead of searching for all the items at once, focus on finding just one or two. Use visual or verbal prompts like, "Let's look for something green together!"

Q What if the child becomes overstimulated or dysregulated during the activity?
A Have a calm-down plan ready, such as access to a timeout corner, sensory breaks, or breathing exercises. Use soothing language and allow the child time to self-regulate before re-engaging.

B10. Suncatcher

Activity	Recommended Location	Materials	Activity Goals
Suncatcher	Space with fallen natural materials	Paper plates Colouring materials Self-adhesive plastic sheet Fallen natural materials	FEDC 4: Complex communication and problem-solving FEDC 5: Use of symbols and emotional ideas

Preparation: Cut out a circle in the middle of a paper plate. Stick a piece of self-adhesive plastic sheet that is large enough to cover the entire circle on the bottom of the paper plate.

1. Guide the child in looking for fallen natural materials to stick onto the plastic sheet.
2. Paste another plastic sheet over the natural materials.
3. Guide the child in decorating the paper plate using colouring materials.
4. Place the suncatcher towards the sun and observe how the light reflects.



Figure 18. Suncatcher

Q What if the child wants to keep rearranging the natural materials after sticking them on?
A Reassure the child that their creativity is valid. If flexibility is needed, use removable materials, such as blue-tack, or allow them to arrange before sealing the final sheet. This helps support autonomy while gently encouraging task completion.

C. Group Play

Group play aims to provide you and the child with opportunities to work and play together. These group play activities also aim to target children's higher-level thinking, which correspond to milestones 4 to 6 of the FEDC Framework:

- Complex communication and problem-solving
- Use of symbols and emotional ideas
- Logical thinking and integration of ideas

Examples of Group Play Activities
The following highlights a range of group play activities that can be implemented.

C1. Nature Tower

Activity	Recommended Location	Recommended group size	Materials	Activity Goals
Nature Tower	Spacious area with fallen branches	Two or more	Branches	FEDC 4: Complex communication and problem-solving - facilitate awareness and understanding of working together



Figure 19. Nature Tower

1. Assist the child in collecting fallen branches.
2. Build a tower together by stacking the branches on top of one another.

Q What if a child takes all the branches or refuses to share materials?
A Gently acknowledge the child's enthusiasm while setting clear expectations: "Let's make sure everyone has a turn to add a branch." If needed, prepare individual sets of materials before transitioning to shared materials.

Q What if a child knocks down the tower on purpose or becomes disruptive?
A First, assess if the behaviour is due to overstimulation, frustration, or a need for sensory input. Redirect the energy with a calming strategy (e.g., leaf breaths or movement break) or provide a parallel version of the task (e.g., "Can you build a mini tower next to this one?"). Reinforce positive contributions using specific praise: "Thank you for helping us rebuild."

Q What if a child becomes upset when the tower falls accidentally?
A Validate their feelings ("It can be really upsetting when it falls") and encourage a problem-solving mindset: "Let's see how we can make it stronger together." Allow time and space if the child needs to regulate before trying again.

Q What if a child does not want to participate in building the tower?
A Respect their choice while offering alternative ways to stay involved, like sorting branches by size or observing and providing input. Encourage participation without pressure: "Would you like to tell us where this branch should go?" Offer a role that aligns with their comfort level.

Q How can I support collaboration among children who are non-verbal or have limited communication?
A Model gestures like pointing or nodding. Narrate actions and choices to build shared attention and understanding. Reinforce any attempts to communicate, even if non-verbal.

C2. Penguin Nest

Activity	Recommended Location	Recommended group size	Materials	Activity Goals
Penguin Nest	Spacious area	Two or more	Shovel Pebbles Circular frame/plastic container	FEDC 4: Complex communication and problem-solving - improve awareness of working together with a common goal

1. Introduce the circular frame/plastic container as a penguin's nest.
2. The goal is to help a penguin build their nest by collecting natural materials using a shovel.
3. Work with the child to gather natural materials using the shovel.
4. Build the nest by placing the natural materials inside the frame/container.



Figure 20. Making Penguin's Nest

Q What if a child repeatedly removes materials from the nest instead of building it?
A This may be a form of sensory exploration. Gently redirect by framing the task playfully: "Oh no, the penguin's nest is getting empty! Can you help fill it up again?" You can also turn it into a "build and unbuild" game to maintain interest while staying within the theme.

Q What if the child insists on keeping the materials rather than placing them in the nest?
A You can suggest, "Let's put a few in the penguin's nest and you can keep the rest in your explorer pouch."

Q What if the child throws materials or disrupts other children's nests?
A Pause and check for signs of sensory overload or emotional dysregulation. Offer a calming strategy like deep breathing, or guide the child to the timeout corner for a short break. Once regulated, invite them to rejoin with a new role or clear expectations: "Let's try being gentle builders this time."

Q How can I involve a child who seems disinterested or distracted?
A Use storytelling to build engagement: "Our penguin eggs are feeling cold—they really need a nest to stay warm!" You can also offer roles (e.g., "You're the penguin helper; I'm the lookout!") or introduce a simple challenge ("Can you find three different colours for the nest?").

C3. Nature Hopscotch

Activity	Recommended Location	Recommended group size	Materials	Activity Goals
Nature Hopscotch	Spacious area	Two or more	Fallen leaves Rocks	FEDC 4: Complex communication and problem-solving - visual motor coordination, taking turns, following group rules

1. Collect fallen leaves and rocks to design and each create a hopscotch.
2. Take turns to try each other's hopscotch.

Q How should I handle a child who insists on doing the activity their way and resists trying others' hopscotch designs?
A Respect their need for control while gently encouraging flexibility through gradual exposure. Offer choices within limits, such as "Would you like to try your friend's design first or after your own?" Use social stories or visual schedules if helpful.



Figure 21. Nature Hopscotch

Q How do I manage frustration or meltdowns during the activity?
A Prepare by knowing each child's triggers and calming strategies. Use a calm voice, offer sensory tools (like a fidget toy), and allow breaks if needed. Maintain a predictable routine and give advance warnings before transitions.

Q How can I help children who have difficulty understanding the rules or purpose of the game?
A Use simple, concrete language and repeat instructions as needed. Demonstrate the activity step-by-step and use visual aids like pictures or symbols. Check understanding by asking the child to show or explain what they will do.

Q What if some children have limited motor skills and find hopping challenging?
A Modify the movement by allowing stepping or walking through the hopscotch instead of hopping.

Q How do I encourage social interaction among children who prefer solitary play?
A Respect individual preferences but gently prompt social engagement by pairing children who may feel more comfortable together. Use structured turn-taking and cooperative elements, and celebrate small social attempts with positive reinforcement.

C4. Catch a Tail

Activity	Recommended Location	Recommended group size	Materials	Activity Goals
Catch a Tail	Spacious area	Two or more	-	FEDC 4: Complex communication and problem-solving - understand game rules, taking turns



Figure 22. Catch a Tail

1. Ensure the activity is set up safely so the child can move confidently and enjoyably. If the child has gross motor difficulties, provide support or adapt the activity to prevent injury. Conduct the activity on dry, non-slippery surfaces, preferably large open grass patches.
2. Look for a large leaf.
3. Hold the leaf behind you like a tail.
4. The child's goal is to chase you to catch your tail.
5. Take turns being the catcher and the chaser with the child.
6. During wet weather, move the activity to a sheltered area.

Q What if a child tries to grab the leaf tail and refuses to let go?
A Gently but firmly explain the rules, and use a consistent routine for switching roles. You may also offer alternative sensory toys or fidget items to redirect the child's need to hold on.

C5. Where is the Dinosaur?

Activity	Recommended Location	Recommended group size	Materials	Activity Goals
Where is the dinosaur?	Sand pit	Two or more	Dinosaur printout Ice cream sticks, spade Rocks and sticks	FEDC 4: Complex communication and problem-solving - motor planning, pretend play

Preparation: Print and laminate the dinosaur template. Cut the picture of the dinosaur into four pieces. Glue an ice cream stick behind each dinosaur piece.

1. Bury the dinosaur pieces sticks in the sand pit.
2. Pretend to play as archaeologists with the child, guiding them to dig for the dinosaur underground.
3. During wet weather, hide the dinosaur pieces around a sheltered area.



Figure 23. Where is the Dinosaur

Q How can I support a child who is uncomfortable touching or digging in sand?
A Offer alternatives such as using gloves or tools like small shovels. You can also allow the child to observe others digging or participate by guiding the search verbally. Gradually introduce sand play in short sessions to build tolerance.

Q How do I manage behaviours if a child tries to take all the dinosaur pieces or refuses to share?
A Set clear, consistent rules for turn-taking and sharing before starting. Use visual timers. Reinforce sharing with praise and model cooperative behaviour. If needed, break the activity into smaller turns to reduce frustration.

Q How can I handle a child who becomes frustrated or anxious if they cannot find pieces right away?
A Give encouragement and reassurance. Break the task into smaller steps and celebrate each piece found. Use visual cues or hints to guide the child. Allow the child to take breaks if needed.

C6. Water the Plants

Activity	Recommended Location	Recommended group size	Materials	Activity Goals
Water the Plants	Area with plants that can be watered	Three or more	Sponges Pail Water dispenser	FEDC 4: Complex communication and problem-solving - motor planning and coordination, understand a functional task: water the plants

1. Collect water in a pail.
2. Work together with the child to soak the sponge in the pail and water the plants around the space.



Figure 24. Water the Plants

Q How can I support a child who dislikes the feeling of wetness or is hesitant to touch the sponge?
A Offer alternatives such as wearing gloves, using smaller amounts of water, or letting the child water plants with a spray bottle or cloth. Allow gradual exposure by encouraging the child to touch the sponge briefly or hold a dry sponge first.

Q What if a child repeatedly splashes water or dunks the sponge excessively?
A Set clear, gentle limits and explain the purpose of watering plants. You can redirect the child to other sensory activities that provide similar input but are less disruptive, like playing with water beads or using sensory bottles.

Q How can I encourage participation for children who are reluctant or anxious about the water?
A Use simple, clear instructions and demonstrate the activity first. Provide plenty of praise for small attempts and allow the child to observe before joining in. Use visuals or social stories to explain the task.

C7. Human Train

Activity	Recommended Location	Recommended group size	Materials	Activity Goals
Human Train	Maze area, obstacle course	Four or more	Branches	FEDC 4: Complex communication and problem-solving - following group rules, motor coordination

1. Together with the group, look for branches and leaves large enough for two people to hold onto.
2. Hold a branch/leaf between the person in front and behind of you. The person in front will guide the group's movement.
3. Without letting go of the branch, move like a train to complete the maze/different zones in the nature playgarden.
4. During wet weather, move the activity to a spacious sheltered area.




Figure 25. Human Train

Q What if a child is anxious or overwhelmed by close physical contact or moving together as a group?
A Respect personal space needs and encourage the child to participate at their comfort level. Position them where they feel safest in the train. Use visual aids to explain the activity. Gradually build tolerance to group movement through shorter or slower practice runs.

Q How do I manage difficulties with coordination and following the leader's movements?
A Break down the movement into simple steps and model it clearly. Use verbal cues and gentle physical guidance if appropriate. Praise efforts and allow extra time for practice.

Q What if a child wants to let go of the branch or leaf during the activity?
A Gently remind them of the goal, but avoid forcing. Offer a break or alternative role like being the leader or watcher. Use positive reinforcement when the child holds on successfully.

Q How can I encourage social interaction and cooperation in this activity?
A Use turn-taking for who leads the train and celebrate teamwork with praise or small rewards. Encourage verbal or non-verbal communication like calling out "ready" or "stop."

D. Cool-down

Cooling down after an activity is just as important as warming up. It gives the child a chance to transition calmly from active play to a more relaxed state, helping them regulate their energy levels and emotions. This period allows them to process what they have experienced, reflect on what they enjoyed, and prepare for the next part of their day. A simple wind-down routine can help the child feel safe, settled, and understood.

Examples of Cooling Down Activities
The following highlights a range of cooling down activities that can be implemented.

D1. Sharing

Activity	Recommended Location	Materials	Activity Goals
Reflection Time	Spacious area	Communication Board	Emotional Literacy Regulation Reflection
Breathing and Stretching Exercises (same exercises used in warm-up)	Quieter area	Leaves	Regulation

1. At the end of the session, invite the child to sit in a calm, quiet space.
2. Use the visual communication board to help the child express how they feel. You can guide with prompts like: “How are you feeling right now?” and “Can you point to the face that shows how you feel?”.
3. Ask the child about their favourite part of the session: “Which activity did you like best today?” and “What was your favourite thing you touched, saw, or smelled in the park?”.
4. Encourage the child to talk about or show what they created: “Tell me about what you made.” and “What would you like to name your creation?”.



Figure 26. Using Communication Board (left). Stretching exercise (right)

CONCLUSION

The Nature Play Programme presents a valuable framework for facilitating children's engagement with the natural environment through thoughtfully designed, experiential activities. The intervention supports holistic development across sensory, motor, social, emotional, and cognitive domains, while promoting curiosity, creativity, and a deeper connection to nature.

Facilitating nature play for children with diverse needs, including those with ASD, requires an informed, patient, and adaptable approach. As a facilitator, your role is pivotal in guiding, observing, and supporting children through these experiences, thereby contributing to their overall well-being and cultivating an appreciation for the natural world.

We hope this toolkit has been a comprehensive resource, equipping you with the knowledge and tools to deliver effective, inclusive nature-based interventions—that enrich the lives of both children and their caregivers.

ACKNOWLEDGEMENTS

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This toolkit reflects the collaborative efforts of many, and we hope it continues to support caregivers and professionals in creating joyful, nurturing experiences for every child.

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NUS
National University
of Singapore

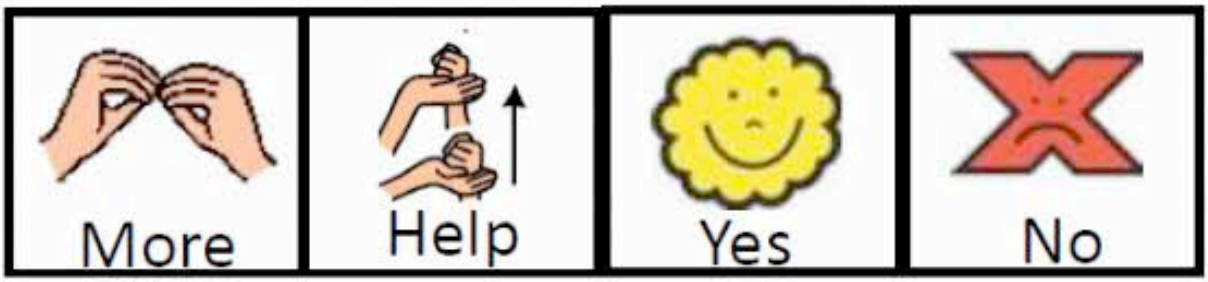
NUHS
National University
Health System

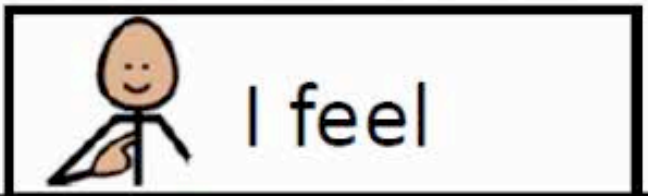
NATIONAL
PARKS

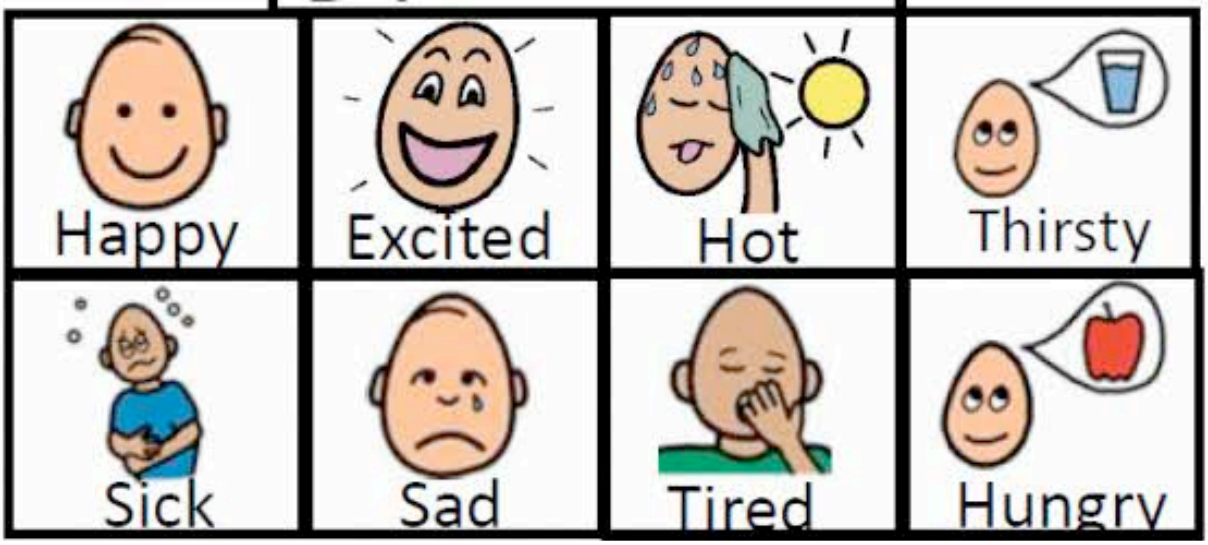
Communication Board





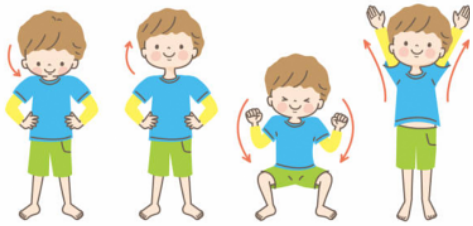






Schedule

1



Warm Up

2



Nature Play

3



Group Play

4



Circle Time



Goodbye

1. Show Kindness

Share with and help everyone

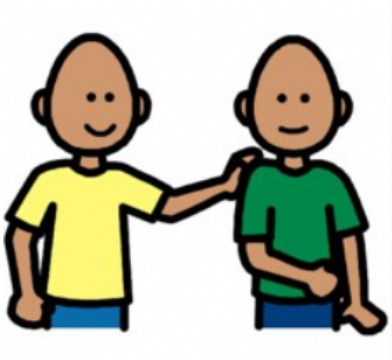


Listen to the speaker



2. Gentle Hands

Take care of friends

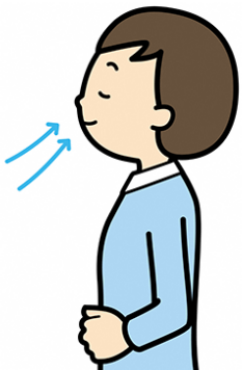


Take care of nature



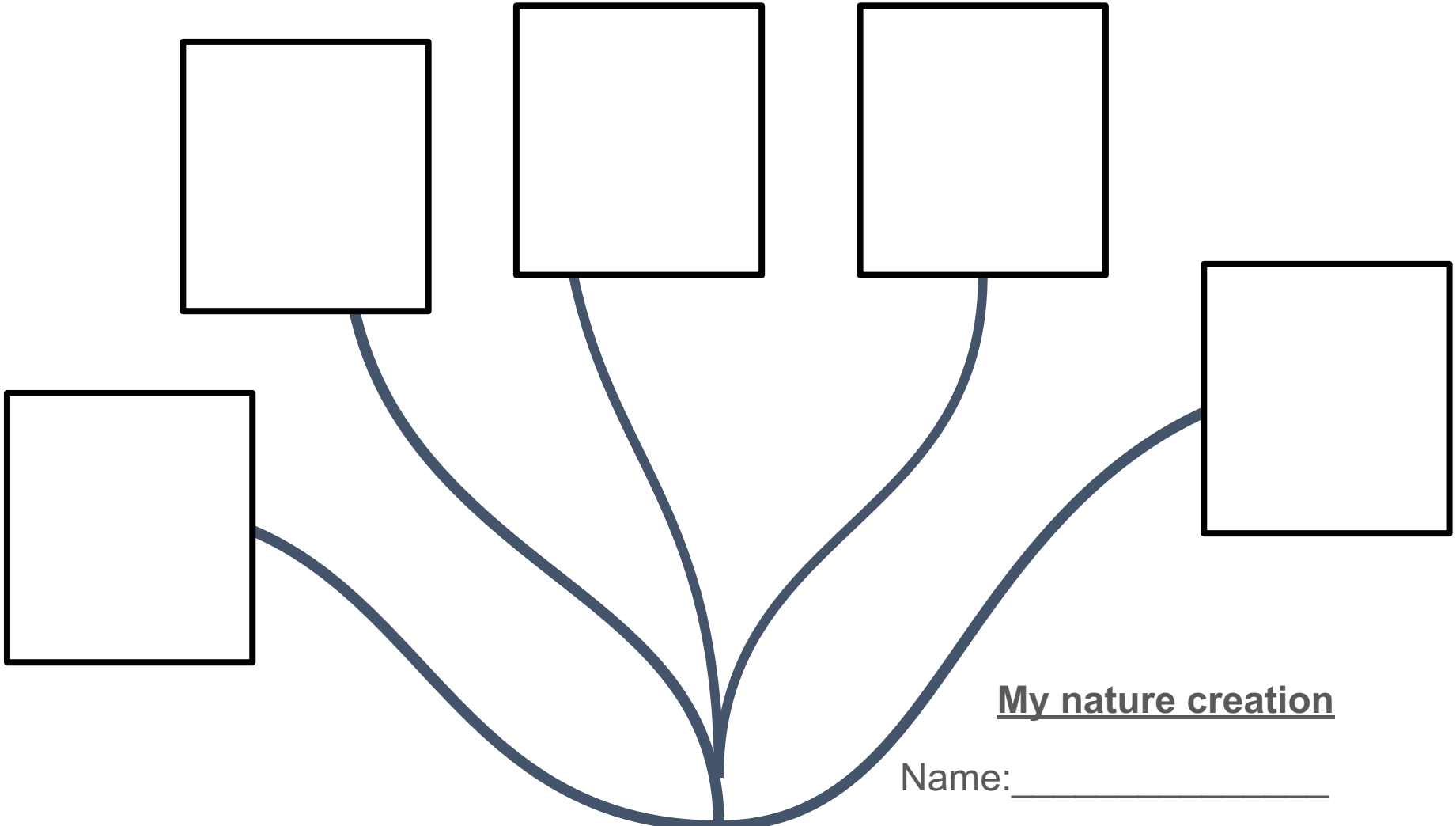
3. Ways to Calm Down

Belly Breathing



Count to 10

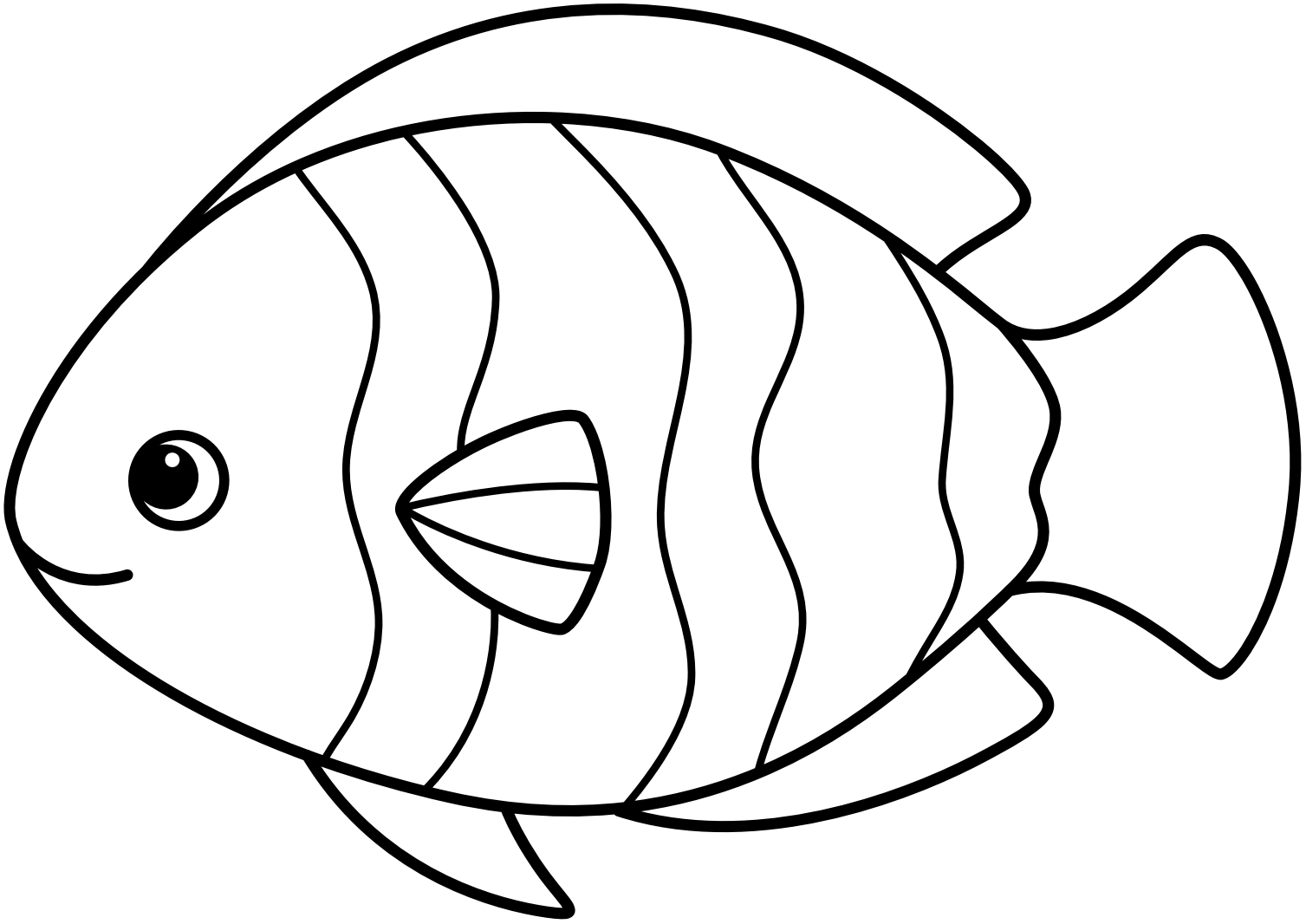




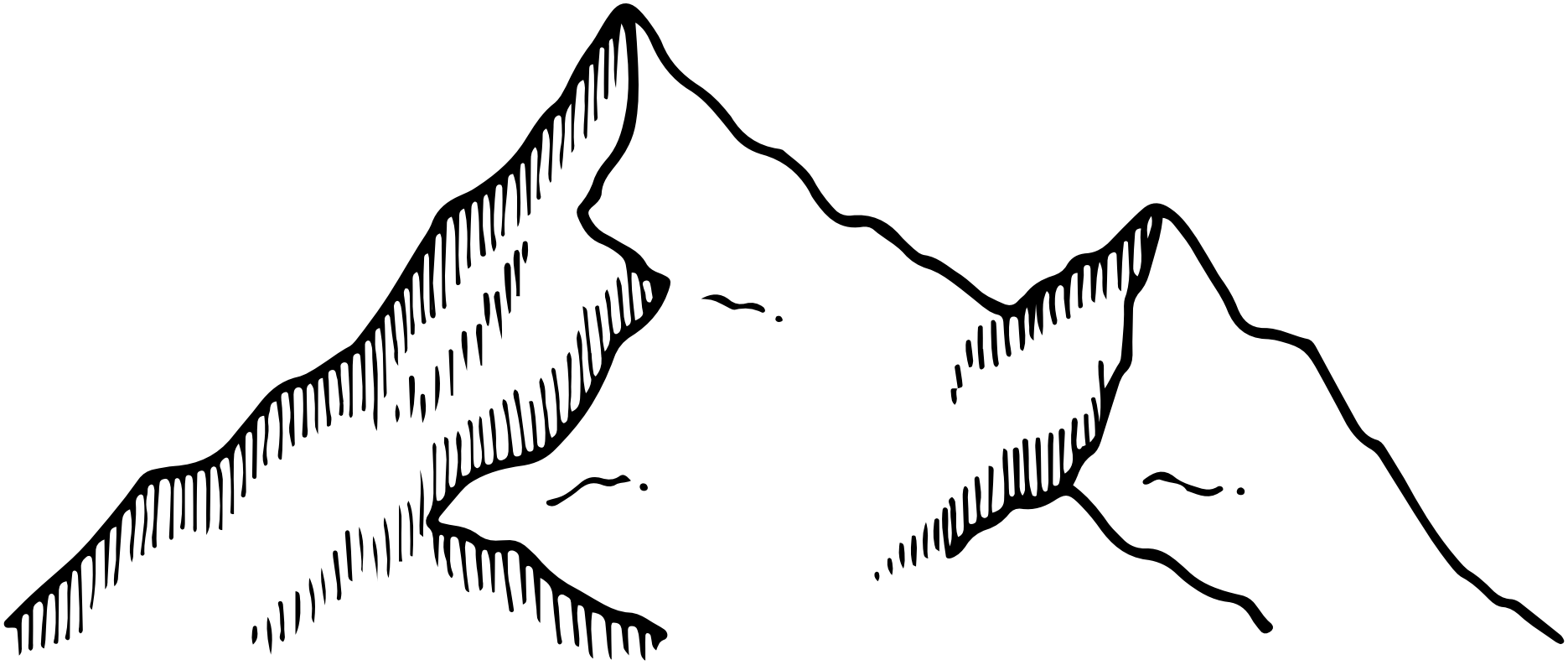
My nature creation

Name:_____

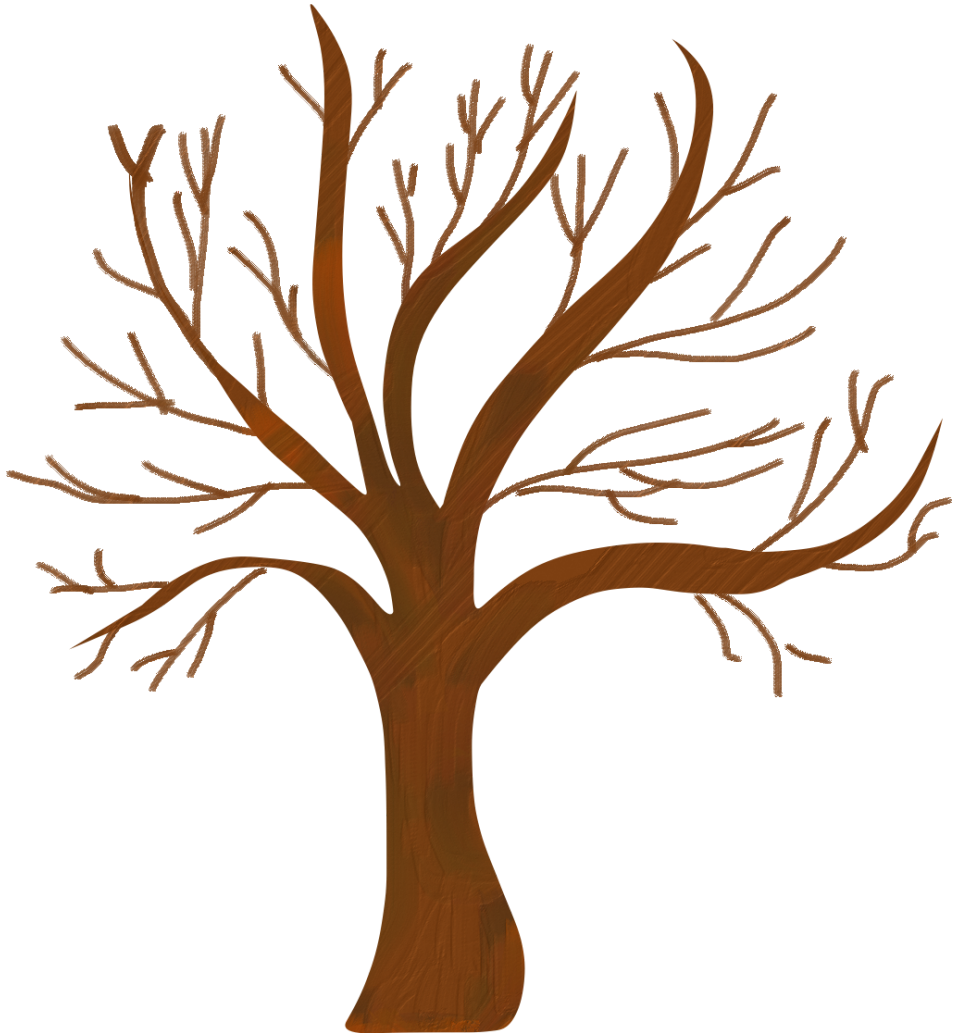
Find 1 leaf the size of this fish



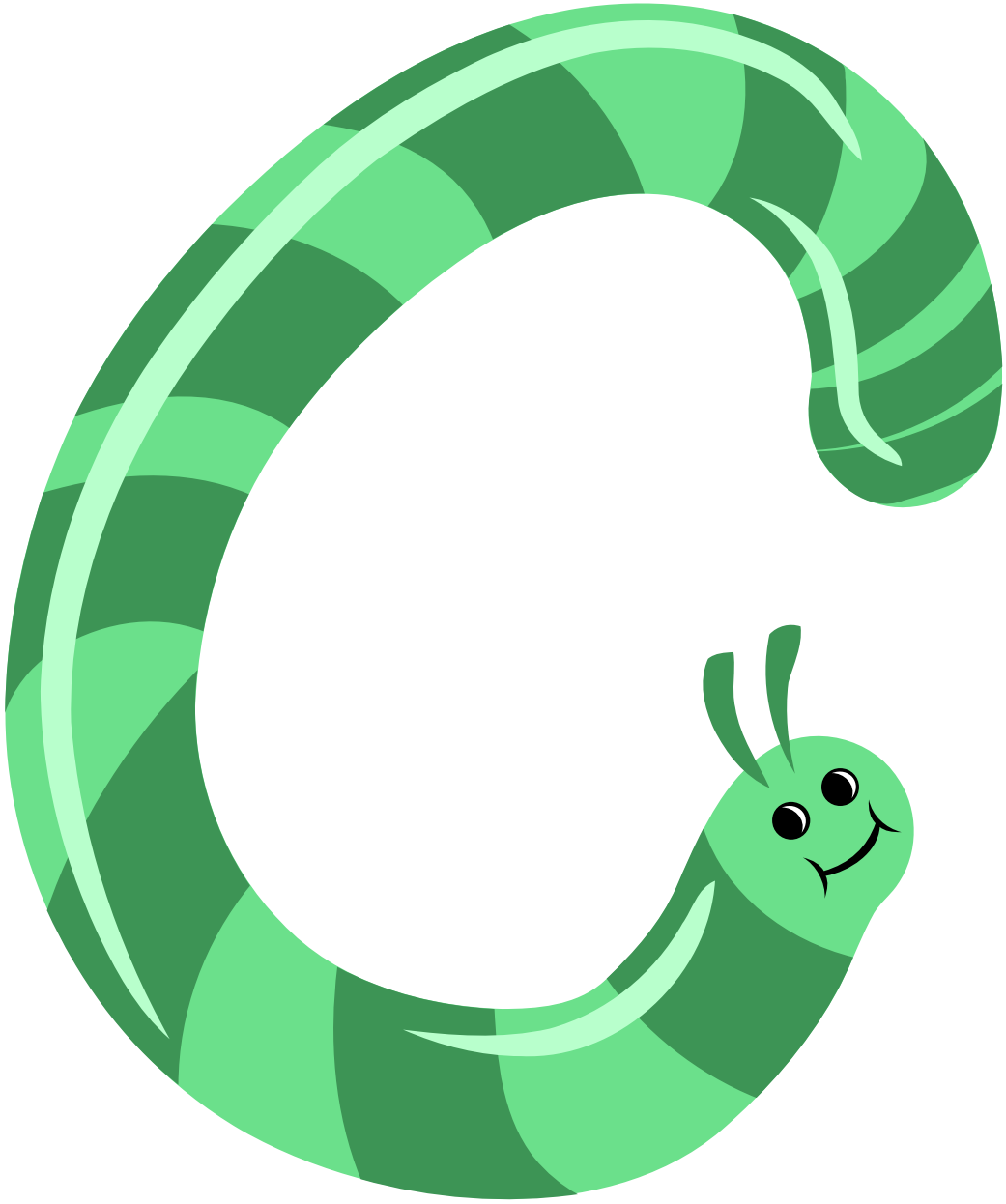
Find 10 leaves and decorate the mountain



Decorate the empty tree, give it some shape



Can you build a caterpillar? What alphabet is this?



Can you build a worm? What alphabet is this?



Spell out your name using things you find in nature