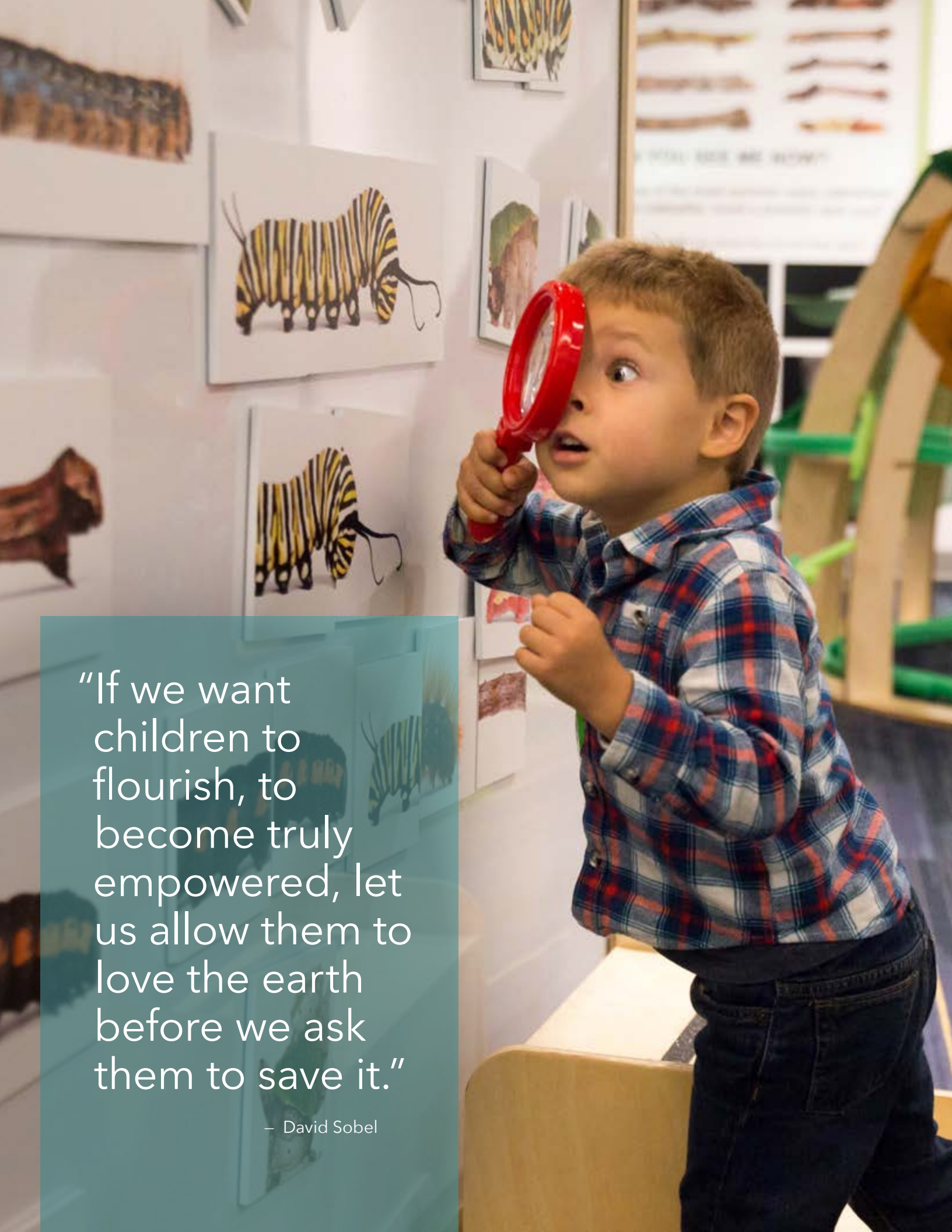


CLIMATE ACTION PLAYBOOK

Supporting Young Children in a Warming World

A Developmental Framework by Caretakers of Wonder





"If we want
children to
flourish, to
become truly
empowered, let
us allow them to
love the earth
before we ask
them to save it."

– David Sobel

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Climate Change Understanding, Mental Health Impacts, and Implications for Education in Early Childhood

Note: Throughout the document we use the words nature, outdoors, outside, and environment interchangeably. Nature play refers to outdoor play in an area – big or small – where children have some level of freedom to explore living and non-living things such as grass, worms, insects, sand, rocks, flowers, and trees. This area might be a yard or park; a patch of woods or forest preserve; or a creek, pond, marsh or beach. Even a bit of tall grass, a small garden, or a puddle can offer nature play!

RAISING HAPPY, HEALTHY YOUNG CHILDREN IN A WARMING CLIMATE

“The single greatest opportunity to improve the welfare of children around the country and around the world is to act on climate change.”

– Dr. Aaron Bernstein, Harvard Center for Climate, Health, and the Global Environment

Early childhood is the ideal time to plant seeds of hope, empathy, and agency

The early years, from birth to age eight, are a time of remarkable growth, ripe with opportunities to inspire children to care for themselves, each other, and the world around them. It is a time of extraordinary social-emotional growth, when children are best equipped to develop habits of well-being, hope for the future, and intimate connections with nature. It is also a crucial time to nurture capacities for empathy and resilience, which are key to fostering young children’s health, well-being and development – especially in an era marked by a rapidly changing climate. Early childhood is the foundational period where engaged adults can make the greatest impact on raising responsible, loving, and compassionate human beings who will become future caretakers of our earth and all the beings who share it.¹

Children need guidance from engaged adults

Young children today need adult role models who take climate action themselves and nurture hope for the future. We have the opportunity to prepare them to face challenges with confidence, empathy, resiliency, and hope.

Young children are affected directly and indirectly by the floods, heat waves, wildfires, and droughts brought on by climate change. According to the World Health Organization, children are especially vulnerable to climate change impacts.² In fact, 88% of the disease burden attributable to climate change afflicts children under five years of age.³ And studies show these impacts are felt the hardest by Black and brown children.⁴

Caretakers are now faced with questions about how to protect children and support them at every age.

1. Likhar, A., Baghel, P., & Patil, M. (n.d.). Early Childhood Development and Social Determinants. Cureus, 14(9), e29500. <https://doi.org/10.7759/cureus.29500>

2. Children’s Environmental Health. (n.d.). World Health Organization. Retrieved December 22, 2024, from <https://www.who.int/teams/environment-climate-change-and-health/settings-and-populations/children>

3. Gauthier, S. J. (2023). Changing Degrees: Incorporating the Impacts of Climate Change on Health into Pediatric Residency Education and Practice. The Yale Journal of Biology and Medicine, 96(2), 227–232. <https://doi.org/10.59249/BSGY1262>

Consequently, adults who care for children may need more guidance on what to do and say so their children feel safe and hopeful. In preparing children to navigate climate change, we have found hope in understanding that **what best serves children's health best serves our planet's health**.

For example, increasing renewable energy use means the air we breathe will be less polluted, protecting children and their growing lungs. Adding green spaces reduces extreme heat and lowers rates of stress, depression, and anxiety.

The intersection of hope, education, and climate science

Unlike traditional developmental frameworks for early childhood or environmental education, we intentionally blur the lines between the fields of climate psychology, early childhood education, environmental education and climate change, the learning sciences, and climate science. We hope that this Climate Action Playbook helps caregivers and professionals lay the foundation for children to develop life-long practices of wonder, engagement, connection, empathy, hope, and collective action.

Tools and tips to help children flourish

This Playbook is meant to support museums and caregivers to serve children's intersecting developmental needs at critical stages from birth to age eight as they come to understand the changing climate. This includes ways that caregivers can help children create norms of self-care and connection with one another, cultivate their well-being and capacity to flourish, and establish an enduring relationship to Earth's living beings and interconnected systems. In so doing, adults nurture their own key capacities for hope through action.

Created with love

This Playbook is designed by professionals from nine children's museums and science centers in the Caretakers of Wonder consortium, along with expert advisors in neuroscience, climate psychology, early childhood and nature education, equity, and climate change. We worked collaboratively to develop these tools and resources and are deeply grateful for

each participant's insights and guidance. Together, this cohort pioneered the Playbook, piloted the emerging framework's principles in their museums, developed strategies to communicate climate messages, and walked the talk by reducing carbon emissions in their institutions.

Our approach

The Playbook's bold approach combines nature exploration with age-appropriate empathy building, resiliency, hope, and action. It focuses on what concerned adults can be doing now, on behalf of children, even if their own children or those they serve are too young to fully understand climate change and its implications. This is critical because many climate resources currently available for children or caregivers neglect the needs and concerns of early learners.

While we must help young children navigate the consequences of climate change, attempting to educate this age group about the changing climate is not our aim. Instead, our goal is to sow delight, curiosity, agency, and empathy, and to help museum professionals and caregivers understand their job as role models in building resilient children who can flourish in a warming world.

The good news is that more adults than ever before, 72% of U.S. adults, acknowledge that climate change is happening, and 58% of U.S. adults understand that climate change is caused by human activities.⁵ We simply need new tools and resources to guide us.

Our hope for you

Continue to foster a love of nature with young children: catch fireflies, collect dandelions, and ford streams. You're sowing the seeds of good stewardship and future action. Through modeling gratitude, self-care, observation, kindness and self-expression, children can learn the tools of resiliency and empathy. Meanwhile, think deeply about what actions, large and small, YOU can take now to make a bigger, bolder impact.

Let this Playbook be your guide.

4. Berberian, A. G., Gonzalez, D. J. X., & Cushing, L. J. (2022). Racial Disparities in Climate Change-Related Health Effects in the United States. *Current Environmental Health Reports*, 9(3), 451-464. <https://doi.org/10.1007/s40572-022-00360-w>

5. Yale Program on Climate Change Communication, Climate Opinion Factsheet, May 8, 2024, <https://climatecommunication.yale.edu/visualizations-data/factsheets/>

PLAYBOOK STRUCTURE

This Playbook is divided into two sections. The first is for caregivers and engaged adults; the second is for museum professionals in areas of education, exhibits, communications, facilities, operations, and visitor services. Resource links are sprinkled throughout and listed at the end of the document.

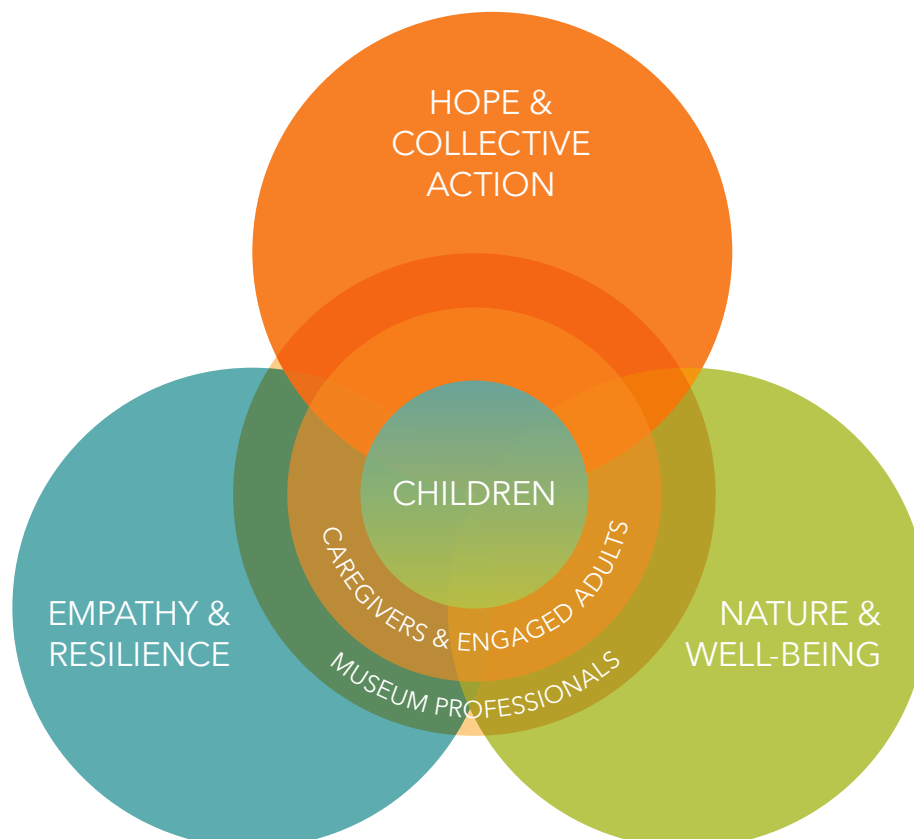
The Playbook is loaded with messages, actions, tips, and activities organized by categories and presented by age group (birth to age 3, ages 3 to 6, and ages 6 to 8) to help adults scaffold their children's emerging awareness of themselves, their communities, and the climate-changing world.

The two sections of the Playbook are further broken down into three categories representing a toolset that children will need in a warming world. Each category, **Nature & Well-being, Empathy &**

Resilience, and Hope & Collective Action, provides developmental messages and milestones as well as concrete activities that support children's growing agency. Each section also encourages adults to take pro-climate actions.

Pick and choose activities that work for you and your situation. Lasting change is incremental and often achieved by a series of baby steps, though sometimes with a few giant leaps. Changing habits, actions, and activities is difficult. We all deserve grace, patience, and moments of celebration as we learn to take better care of our world's precious wonders.

Early Learning Climate Framework



SUMMARIES BY CATEGORY & AGE GROUP

Nature & Well-being

When young children have a foundation of positive nature experiences that support their mental and physical health, they are more likely to become engaged environmental stewards as they grow older.

Birth to Age 3, Infants & Toddlers

Connect children with nature in ways that foster a sense of well-being. The more time outdoors, the better. Notice squawking birds, scudding clouds, skittering squirrels, and aromatic flowers. Stretch, smell, touch, taste, listen, watch. The goal is to model an enjoyment and appreciation of nature.

Ages 3-6, Preschool

Encourage your child to explore the natural world in ways that promote incremental independence. Get to know your wild animal neighbors – and understand that we are their neighbors, too. Nature sparks children's curiosity; follow their lead. Be outside with your child in many kinds of weather.

Ages 6-8, Early Elementary

Widen the sphere of independent exploration for your child. Allow them to climb boulders, balance on low walls, and build forts. Notice and talk about how things in nature are connected – including us humans, too.

Empathy & Resilience

When young children develop tools to value and express their feelings, show gratitude, and practice respecting others, they strengthen their capacities for empathy and resilience. These skills enhance well-being during challenging times and help children care for themselves, each other, and the natural world.⁶

Birth to Age 3, Infants & Toddlers

Help children express feelings through words or baby sign language. Model self-care, gratitude, and respect for others. Provide positive feedback, and use verbal reminders. Choose activities that encourage risk-taking and problem-solving, and incorporate pauses between activities.

Ages 3-6, Preschool

Model kindness through language and actions, praising children when they demonstrate kind behaviors or words. Model gently touching small animals and careful observation of plants and animals. Encourage children's agency as they explore, collaborate, make mistakes, and care for themselves and others.

Ages 6-8, Early Elementary

Create scaffolded activities that help children understand, appreciate and care for themselves, others, and the environment. Create daily practices of gratitude. Encourage positive self-talk when faced with new challenges or setbacks. Practice mindful breathing, taking pauses, and seeing things from others' perspectives.

Hope & Collective Action

When young children are supported and inspired, they feel empowered to help and are more likely to maintain a sense of hope and optimism as they grow. When they take action (like picking up garbage or planting a community garden) as part of a family or group, they gain understanding about what it means to be part of a community.

Birth to Age 3, Infants & Toddlers

Practice actions that help children find joy in nature and community. Let your child see you taking care of plants, animals, other people, and your neighborhood. Working together is our most effective approach to addressing climate change.

Ages 3-6, Preschool

Find programs that provide outdoor time and encourage children to work together to solve challenges. Model for children how to care for and help neighbors. Work together with other parents to support a community project or environmental effort.

Ages 6-8, Early Elementary

Find tasks for children that contribute to positive climate action for your family. Give your child responsibility for taking care of family pets. Make a family commitment to help others in your community, at your church, museum, community garden, preschool, or contribute to clothing, food, or toy drives.

6. Chawla, L. (2020). Childhood nature connection and constructive hope: A review of research on connecting with nature and coping with environmental loss. *People and Nature*, 2(3), 619-642. <https://doi.org/10.1002/pan3.10128>



"You are hope
in action."

– Jane Goodall

TIPS & TOOLS FOR MUSEUM VISITORS

Infants & Toddlers, Birth to Age 3

Nature & Well-being
Empathy & Resilience
Hope & Collective Action

Preschool, Ages 3-6

Nature & Well-being
Empathy & Resilience
Hope & Collective Action

Early Elementary, Ages 6-8

Nature & Well-being
Empathy & Resilience
Hope & Collective Action

Nature & Well-being | Infants & Toddlers, Birth to Age 3

Connect children with nature in ways that foster a sense of well-being. The more time outdoors, the better. Notice squawking birds, scudding clouds, skittering squirrels, and aromatic flowers. Stretch, smell, touch, taste, listen, watch. The goal is to model an enjoyment and appreciation of nature.



To Think About

Time outdoors is great any time of year.

- Fresh air and green space improve infants' health. Every day is a good day to go outside!
- Nature play, starting as young as six months, helps with physical and mental development.⁷
- Exposure to sunlight, even while in strollers, is valuable for infants and toddlers.⁸
- Rain and snow gear and sun protection make year-round activity more fun. Free exchanges like Buy Nothing Facebook groups, Craigslist free stuff, or local thrift shops are great places to find free or gently used outdoor gear.

To Do

Let nature fill your child's senses as much as possible.

- Place your baby on a blanket under a tree so they can watch the leaves sway in the wind. Allow them to touch and smell grass, mud, sand, and water.
- When you take your toddler on a walk, bring a handful of crayons. Look for things in nature that match the colors.
- Eat meals and snacks outdoors.
- Let toddlers walk and climb outside on surfaces with different textures: grass, soil, asphalt, rock, sand.
- Lie on the ground and look at the clouds and sky.
- Stroller around the neighborhood in all types of weather. Notice light patterns, sounds, and animal activity.

7. Prins, J., van der Wilt, F., van der Veen, C., & Hovinga, D. (2022). Nature play in early childhood education: A systematic review and meta ethnography of qualitative research. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.995164>

8. Lefebvre, L., Amazouz, H., Rancière, F., & Momas, I. (2024). Early exposure to sunlight and allergic morbidity: The PARIS birth cohort. *Science of The Total Environment*, 930, 172543. <https://doi.org/10.1016/j.scitotenv.2024.172543>

9. Bergroth, E., Remes, S., Pekkanen, J., Kauppila, T., Büchele, G., & Keski-Nisula, L. (2012). Respiratory tract illnesses during the first year of life: Effect of dog and cat contacts. *Pediatrics*, 130(2), 211-220. <https://doi.org/10.1542/peds.2011-2825>

Nature & Well-being | Infants & Toddlers, Birth to Age 3

**To Think About****Interacting with animals promotes children's health.**

- Infants who grow up in homes with pets have fewer ear infections.⁹
- Animal names are often some of the first words learned by one-year-olds.¹⁰
- Children feel empowered by learning to pet and feed animals.¹¹
- Cats, gerbils, fish, and calm dogs can make for easy and safe pets in your home.

To Do**Consider keeping animals in the house or visit with animals when you can.**

- Visit animals at a park, shelter, wildlife sanctuary, aquarium, or zoo. Or visit friends with pets!
- Set up a bird feeder in a window to watch local wildlife.
- Choose picture books featuring photos of local wildlife and say animal names aloud.

10. Bahrami, B., Cunningham, J., & Leyland, Z. (2023, June 12). Expert insight: Why learning animal sounds can be crucial to children's language development. Western News. <https://news.westernu.ca/2023/06/expert-insight-learning-animal-sounds-crucial-to-childrens-language-development>

11. Purewal, R., Christley, R., Kordas, K., Joinson, C., Meints, K., Gee, N., & Westgarth, C. (2017). Companion Animals and Child/Adolescent Development: A Systematic Review of the Evidence. International Journal of Environmental Research and Public Health, 14(3), 234. <https://doi.org/10.3390/ijerph14030234>



To Think About

Experiences with physical objects and nature counterpoint digital experiences.

- Appreciating a diversity of sensory input early on translates into appreciating a diversity of experiences and people later in life.
- Limiting exposure to screens for infants and toddlers is beneficial to their health and development.¹² Even small bursts of outdoor time together helps counteract screen time.
- Focusing on faraway things in a landscape helps develop healthy vision.¹³

To Do

Explore, relax, and take safe risks outside when possible.

- Play with natural materials like sticks, shells, moss, and river rocks – they offer different textures to explore.
- Encourage curiosity and simple risk-taking. Let your baby crawl over logs and around boulders.
- Practice deep breathing while outside.
- Try infant massage on your baby while outside looking up at the sky. Encourage curiosity by asking, “What kind of animals can you see in the clouds?”

To Keep in Mind

No need to worry about your infant or toddler getting a little dirty or, within limits, putting sticks, leaves, and other natural objects in their mouth. They’re building a strong immune system that can ultimately protect them from harmful bacteria in their local surroundings.

12. Xiang, H., Lin, L., Chen, W., Li, C., Liu, X., Li, J., Ren, Y., & Guo, V. Y. (2022). Associations of excessive screen time and early screen exposure with health-related quality of life and behavioral problems among children attending preschools. BMC Public Health, 22(1), 2440. <https://doi.org/10.1186/s12889-022-14910-2>

13. Wang, B., Watt, K., Chen, Z., & Kang, P. (2023). Predicting the child who will become myopic – can we prevent onset? <https://pubmed.ncbi.nlm.nih.gov/37194117/>

Empathy & Resilience | Infants & Toddlers, Birth to Age 3

Help children label and express their feelings through words or baby sign language. Model self-care, gratitude, and respect for others' needs and feelings. Provide positive feedback about a child's resilience and use verbal reminders about showing kindness to others. Choose activities that encourage risk-taking and problem-solving and incorporate pauses between activities.



To Think About

Modeling kindness and care for others, all species, and the earth is key to climate care.¹⁴

- Very young children use their behavior more than words to communicate. Though they can't fully express feelings or read facial expressions, they are watching and absorbing every action.
- Using kind, caring language everywhere you go and with everyone you meet will set the stage for building your child's aptitude for empathy.
- Squatting down to pet an animal, looking into a child's eyes, or smiling at a stranger communicates kindness in non-verbal ways to children.

To Do

Create opportunities to practice kindness with others.

- Model gentleness when handling animals, from family pets to worms on the sidewalk. Talk about safe petting, feeding, and other respectful animal care practices.
- Use kind, caring language with others, including strangers, animals, and plants. Practice using caring language in the laundromat, park, grocery store, or forest.
- Lay the foundation for empathy by making comparisons between children and other animals: "You have eyes, so does the guinea pig! You eat food, so do the birds!"
- Find small ways your child can help the family. Reinforce your gratitude for their help with encouraging words, regardless of the results.

14. Chawla, L. (2020). Childhood nature connection and constructive hope: A review of research on connecting with nature and coping with environmental loss. *People and Nature*, 2(3), 619–642. <https://doi.org/10.1002/pan3.10128>



To Think About

Building your child's confidence and resilience by encouraging low stakes risk-taking, noticing their feelings, and recognizing their abilities will help them navigate a warming world as they grow.

- Young children can learn sign language before words, and simplified [baby sign language](#) is a good place to start. Being able to communicate and be understood in whatever way is most convenient builds early confidence.
- Repeating activities builds your child's mastery, confidence, and pride, especially when you celebrate their efforts, not the results.
- Phrases like, "I like the way you're thinking about..." or "You've found an interesting solution," help convey your faith in their problem-solving abilities.

To Do

Model and label language that expresses feelings; notice body and facial expressions of others.

- Be calm and patient. Children are constantly testing and learning.
- Look in a mirror and identify faces that are happy, sad, angry, or other.
- Label your child's emotions. "You sound angry, do you feel angry?"

Encourage activities that involve low-level risk-taking and problem-solving.

- Model positive language and self-talk by saying things out loud like "I can do it," or "I've got this," when faced with a challenge.
- When your child falls, use language that recognizes your child's strength. "Wow, that was a great recovery," rather than questioning their resilience as in, "Oh gosh. Are you ok?"
- Encourage children to overcome obstacles and explore outdoor terrain, like climbing over a log, or jumping over (or in!) a puddle.

To Keep in Mind

Refrain from using negative language when talking about other people or perspectives. Instead, model a generous spirit when mentioning people with whom you may disagree.

Hope & Collective Action | Infants & Toddlers, Birth to Age 3

Practice concrete actions that help children find joy in nature and community as well as hope for the future. Let your child see you taking care of plants, animals, other people, and your neighborhood. Working together with others is our most effective approach to addressing climate change.



To Think About

The news we consume impacts our mental health. Limiting exposure to negative news, seeking out positive news, and exploring your local surroundings will help you stay grounded.¹⁵

- It can be overwhelming to face climate change issues while raising young children. Limiting your news consumption can help maintain your sense of hope.
- Nurturing a connection with your child and nature lays the groundwork for a healthy lifetime relationship with the environment.
- Developing your own outdoor practices and spending time outside in different kinds of weather can buoy your joy and sense of hope.

To Do

Help your children feel comfortable in your community and in nature.

- Notice and appreciate with your child the different natural features that you see outside (trees in bloom, ants, weeds, clouds, and the moon).
- Point out community helpers and good news.
- Convey to your children that you love them and are here to take care of them. Though they may face challenges, you are here to help them and work together on solutions.
- Seek out positive news stories featuring climate solutions and action. For dedicated, solutions-oriented climate news coverage, consider outlets like [Anthropocene Magazine](#) or [The Daily Climate](#).
- Try connecting with nature through foraging, photography, or another activity. Find joy and share it with your children.

15. Boukes, M., & Vliegenthart, R. (2017). News Consumption and Its Unpleasant Side Effect. *Journal of Media Psychology*, 29(3), 137-147. <https://doi.org/10.1027/1864-1105/a000224>



To Think About

Collective action is our greatest hope for addressing climate change

- Engaging with your community can help children learn the importance of the larger community outside of their family.
- Supporting others conveys an important message to children about the interconnectedness of people and other living beings.

To Do

Provide opportunities and time for your children to practice sharing.

- For very young children, use the simple serve-and-return practice (when your child offers you something, you accept it and then offer it back to them or vice versa). This is a first step in understanding a world outside their own needs.
- Have pretend tea or snack parties where you share pouring/distributing and drinking/eating the pretend tea or snack.
- Encourage toddlers to share toys back and forth with an older sibling.
- Share a meal, toys, books, tools, or whatever is needed with neighbors as a way to model sharing for your children.

Hope & Collective Action | Infants & Toddlers, Birth to Age 3



To Think About

Being together with other families and focusing on community helps develop an ethic of community care.

- Exploring events and activities in and around your community that attract people with shared interests can facilitate making new connections.
- Connecting with people in your neighborhood can be a first step toward collective action.

To Do

Find parents and families who share your interests.

- Spend time with other community members to help your toddler become comfortable with others outside of your family.

Get outside with other families and their infants and toddlers.

- Find Babies in Backpacks/Toddlers in Tow or family nature club programs to join with your baby or toddler. Take a look at this group planning guide from the [Children & Nature Network](#) to plan your own group activities.

Share talents and resources with your neighbors.

- Host a clothing swap or share toys, games, and other baby products to help reuse and recycle.

To Keep in Mind

Try not to be overwhelmed by all the possible pro-climate actions you could be doing. Focus on incorporating environmentally friendly actions that feel doable. Maybe that means starting to recycle or compost, taking the bus or biking, or bringing a reusable bag to the grocery store. Be patient with yourself. Creating new routines takes time. Remember that you can also be a powerful role model for self-love and gentleness.

Nature & Well-being | Preschool, Ages 3-6

Encourage your child to explore the natural world in ways that promote incremental independence. Get to know your wild animal neighbors – and understand that we are their neighbors, too. Nature sparks children’s curiosity; follow their lead. Be outside with your child in many kinds of weather.



To Think About

It’s good for children to play in different kinds of environments – from conventional playgrounds to beaches, parks, and forests.

- Loose parts play (play with materials that children can assemble and rearrange in many ways) encourages creative thinking and innovation.
- Children this age may give human qualities (like speech) to plants and animals they meet outside. This is natural and helps develop empathy.
- Visiting local parks and attending outdoor education programs or preschools that offer outdoor programming or spaces helps connect children to nature.
- When going outside is challenging, bringing natural materials inside can be the next best thing.

To Do

Play outside whenever possible.

- Visit playgrounds and encourage diverse movements: climbing, sliding, swinging, and crawling.
- Make fairy houses and tell stories about how the unseen forest creatures help us.
- Act out the movements of different animals with your child. Run like a fox, squirm like a worm, hop like a bunny.
- Provide materials such as sticks, old blankets or sheets, clothes pins, and flashlights to help children build small, cozy spaces and forts.

Nature & Well-being | Preschool, Ages 3-6

**To Think About****Playing outdoors develops attitudes of care and concern for the natural world.**

- Regular exposure to the outdoors and time spent in nature from a young age create a powerful foundation for a healthy lifelong relationship with the natural world.¹⁶
- While the idea of leaving no trace in nature is a goal for adults, it is natural for young children to leave a little trace as they touch, collect, build, and dig.
- Natural materials can make for a free and more stimulating alternative to toys and products made from plastics because of the variety of textures, surfaces, densities, and temperatures.
- Opportunities to see food growing are wonderful for children. Local “pick-your-own” farms and orchards, free gardens, and edible forests are great places to visit.

To Do**Build collections, search for creatures, and gather food outside.**

- Collect acorns, twigs, leaves, or stones for counting, sorting, and crafting items like dandelion necklaces, shell bracelets, or leaf crowns.
- Look under rocks or logs for worms or bugs. Hold them in your hands to decrease fear. Promote curiosity by saying things like, “What do you think we’ll find under this log?”
- Create a nature table or mini-museum indoors and listen to your child talk about their collections.
- Encourage children to go barefoot so they can feel the textures and temperatures of the environment.
- Nibble fruits that grow in your area, like mulberries, blueberries, strawberries, and raspberries.

16. Chawla, L. (2020). Childhood nature connection and constructive hope: A review of research on connecting with nature and coping with environmental loss. *People and Nature*, 2(3), 619–642. <https://doi.org/10.1002/pan3.10128>



To Think About

Caring and tending for plants and animals are early behaviors that can help develop an environmental ethic.

- Gardening is a good way to teach close observation and caretaking.
- Children have curiosity about where food comes from, whether at the grocery store or while cooking at home. Buying local produce supports the local economy and connects food production with real people.
- Adopting or fostering an animal companion as a family can let children practice caretaking.

To Do

Nurture animal and plant life indoors or outdoors.

- Plants only need sunshine, water, soil, and attention. Try planting seeds in cups on your windowsill and have children help water them.
- If you have access to a garden, plant things that grow fast and are appealing to children, like green beans, peas, and sunflowers.
- When possible, look for fresh food available at farmers' markets, community gardens, or food banks. Ask to taste lettuce, radishes, bread, or cherry tomatoes.
- If your family has pets, encourage children to feed, observe, and interact with them.
- Visit museums, zoos, and aquariums to see or interact with animals. Observe wildlife in nature to foster an appreciation of living things.

To Keep in Mind

Don't worry about knowing every plant and animal name or natural process. Sharing your enthusiasm and showing genuine interest in your child's thoughts and discoveries matters most.

Empathy & Resilience | Preschool, Ages 3-6

Model kindness through language and actions, praising children when they demonstrate gratitude and kind behaviors or words. Model gentle touching of small pets and careful observation of plants and animals. Notice similarities, “Look, the bird drinks water, just like you,” to help foster ideas of interconnectedness. Encourage children’s agency as they explore, collaborate, make mistakes, and care for themselves and others.



To Think About

Children this age are beginning to communicate their emotions and needs, express feelings, read facial expressions, and recognize kindness – all precursors to caring for the earth.

- Still self-focused, children this age are beginning to recognize that other people have feelings. They may say things like, “Are you sad?” or “He looks angry.”
- They can notice that it feels good when they are kind to others or when others are kind to them.

To Do

Create opportunities to practice kindness with others.

- Have your child make a gift or draw a picture to give to someone who has been kind to them.
- Let your child choose a way to show kindness to a neighbor or friend: picking up litter, bringing over some cookies, saying hello, or filling the bird feeder.
- Make up a story about kindness together. Write the story as they narrate and illustrate.



To Think About

Preschoolers can begin to understand and regulate their emotions and build skills to calm themselves.

- Slow rhythmic breathing exercises help children learn to care for themselves when they are worked up.
- Pretend play and acting out stories and characters helps children explore their emotions and work out their feelings in a low-stakes way.
- Parenting can be stressful, so practicing calming exercises yourself can help you manage the many things you're juggling, while modeling self-care for your child!

To Do

Practice basic breathing exercises, take time for deliberate pause and reflection, and create rituals that foster tranquility.

- Count to five and practice breathing in unison with your child. Notice how calming slow breathing can be.
- Create a [mind jar](#) (like a calming snow globe) and use it when your child needs to feel calm.
- Place several scents in small containers. Have your child sniff the smell for several seconds, then pause and describe. Create a list of calming scents. Return to these scents before bedtime or when needed.
- Talk about or act out the emotions of the characters in a favorite book.

Empathy & Resilience | Preschool, Ages 3-6



To Think About

Staying focused during sensory experiences helps children learn awareness and build attention and resiliency skills.

- Asking children to describe what they see and feel while focusing on a single object or experience can enhance their focus. This helps them learn to filter out distractions, an especially useful tool in school settings.
- Children this age are strengthening their ability to solve problems and communicate their needs and wants. They can often select their preference from two or three choices.

To Do

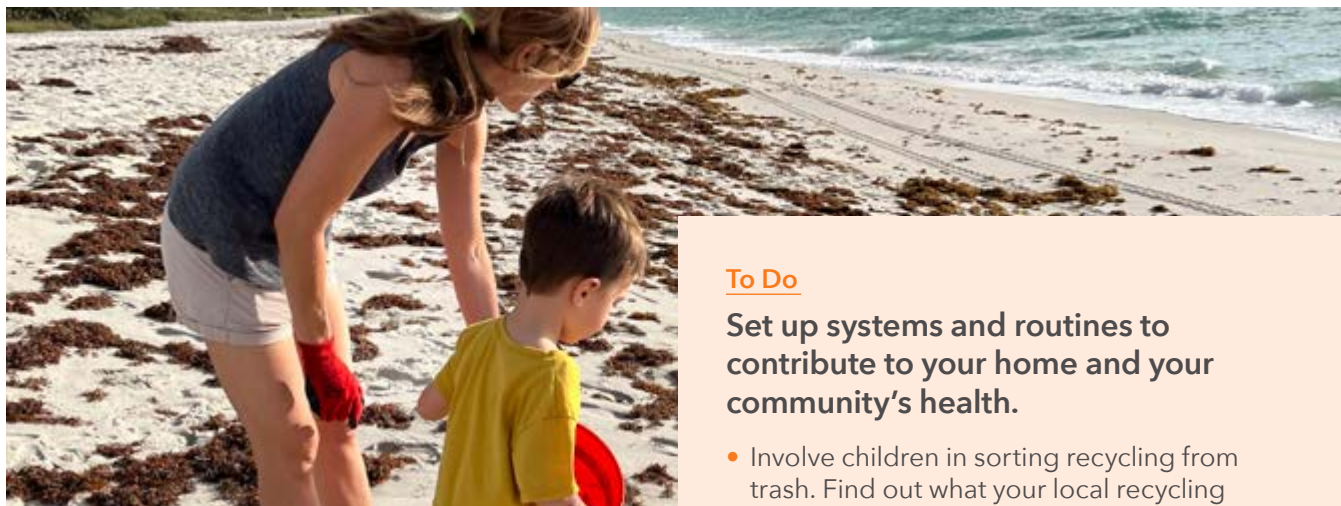
Practice observing, paying attention, and noticing your surroundings.

- Indoors or outdoors, ask your child to listen and name each separate sound they hear. See if they can isolate five different sounds.
- Have your child describe three things in their environment that are the same color or shape.
- Place small bites of different foods in front of your child. With their eyes closed, have them touch, smell, and finally taste each food, chewing at least 10 times. Encourage them to describe the experience.
- Go birding with your child. Pay attention to bird calls and colors, and count how many different birds you find.

To Keep in Mind

Resist solving all your child's problems for them. Trying, failing, and trying again builds confidence and resilience.

Find programs that provide outdoor time and encourage children to work together to solve challenges. Model for children how to care for and help neighbors. Work together with other parents to support a community project or environmental effort.



To Think About

Practicing good environmental caretaking is a precursor skill for climate action. So is talking about caretaking with your children.

- Children this age can begin to practice “good manners” toward the earth. Modeling these simple behaviors is as easy as modeling saying “please” and “thank you.” Soon these things will become second nature.
- You can also model good environmental manners outside by being respectful of animal habitats (not stepping on ant hills or disturbing bird nests) and picking up litter when you see it.

To Do

Set up systems and routines to contribute to your home and your community’s health.

- Involve children in sorting recycling from trash. Find out what your local recycling center accepts. Aluminum cans, glass, and paper/cardboard are recyclable in most communities, and some recycling centers accept even more types of material.
- Try composting in your home or joining a neighborhood composting program. This demonstrates the food cycle and gets children to think about limiting food waste. (Composting also makes great soil for gardens!)
- Collect bottles and cans at your child’s sporting events, preschool, music events, or church gatherings, and recycle them.
- Try a [plant-based meal](#) once each week.
- Practice taking good care of tools and supplies so that they last longer and can be reused. Put the tops back on markers, collect paper scraps for collage, repurpose stubby crayons, take apart and rebuild recycled projects.
- Raise [monarch caterpillars](#) and release butterflies.
- Turn off lights and water when not using them. Have your child practice turning the water off while brushing their teeth.

Hope & Collective Action | Preschool, Ages 3-6



To Think About

Hope comes when you feel that you can make a difference and that you have the tools and the strength to try.

- While the news about climate change can be overwhelming for both adults and children, instilling confidence and motivation will be critical to taking action.
- The natural world is resilient. Nature's capacity to regenerate and adapt can provide inspiration for your own forms of climate action.

To Do

Help your child develop a can-do attitude and belief that their contributions matter.

- Teach children to sort paper, plastics, and cans in your home recycling system.
- When your child has a physical impulse to try something a bit risky, like climbing a big rock or crossing a creek, support them.
- Talk with children about their aspirations, and help them understand how their interests, no matter what they are, are connected to the health of the environment.
- Look for stories of young people making a difference and share them with your child.
- Let your child share their talents with others.



To Think About

Collaborative problem-solving encourages innovative solutions by combining diverse skills, experiences, and perspectives in a supportive environment.

- Introducing children to librarians, custodians, firefighters, and supermarket cashiers supports an understanding that diverse roles/jobs contribute to the community.
- Modeling how individual choices impact the greater community helps build understanding of collective action, and reinforces the idea that we are better together.
- Posing challenges that children can solve on their own helps them practice problem-solving skills.
- Engaging in community and citizen science projects helps support knowing, valuing, and caring for the animals and plants in your area.

To Do

Explore the built environment and talk about its components.

- Ride public transportation.
- Take advantage of public libraries and thank the librarians.
- Compare taking the elevator to walking up the steps.
- Collect trash on your block and recycle the things you can.
- Build pretend cities and talk about where to locate the recycling plant and how to be sure that all neighborhoods have trees to help keep the area cool.

Brainstorm and solve problems together.

- Ask your child questions about the world. "Which is the shortest route to the swings? Where can we find a water fountain? Where do you think that squirrel lives?"

Hope & Collective Action | Preschool, Ages 3-6



To Think About

Sharing and pooling resources reinforces the value of community and encourages reducing and reusing.

- Model ways your family can use their resources thoughtfully and verbalize these choices.
- Talk with children about ways to share resources with other community members.
- Reinforce the idea that waste is not waste until you waste it.
- Change the 3 Rs mantra to include 5 Rs: reduce, reuse, recycle, redesign, rethink.

To Do

Work together with neighbors or friends.

- Have a neighborhood exchange for clothing, tools, and toys, or trade items with friends, neighbors, and family.
- Create a neighborhood vegetable pantry where everyone shares what they've grown or food that they are not going to be able to eat.
- Connect with neighbors to share resources and find out how you might be able to help each other out.

Talk with children about reusing things and the trouble with waste.

- Reuse and share toys, clothes, cribs, and other goods.
- Consider donating and shopping second-hand stores.
- Take a trip to the landfill to see where your family's waste ends up. Notice the different garbage cans and dumpsters in your area. Talk with a garbage collector and thank them for their work.

To Keep in Mind

No need to burden children by bringing up climate change, or even reference that it will become their generation's problem. Celebrate outdoor caretaking and community-building and avoid putting pressure on any single action.

Nature & Well-being | Early Elementary, Ages 6-8

Widen the sphere of independent exploration for your child. Allow them to climb boulders, balance on low walls, and build forts. Notice and talk about how things in nature are connected – including us humans, too.



To Think About

Children love to create their own special places where they feel cozy and make the rules.

- Providing children with access to pillows, bedsheets, and blankets will help them create their own hideouts. Provide them with loose parts.
- By age six or seven, children will want to create forts, dens, and sometimes outdoor hideouts.
- If it is not safe to explore the outdoors, making space for a special place indoors will do.
- Making their fort/den/nest a better place is a precursor to making the world a better place.

To Do

Allow your children to find or create private outdoor spaces for themselves.

- In your apartment courtyard, backyard, or patio, encourage children to find a special place: a home of their own.
- Find a special place in a nearby park and visit it repeatedly. Special places can be under a tree or in a leafy shrub.
- Provide materials so they can make their home cozy and comfortable or suggest the use of natural materials.
- Encourage children to have snacks or read in their special place.

Nature & Well-being | Early Elementary, **Ages 6-8****To Think About**

Children need to be active throughout the year.

- Remember the adage, “there is no such thing as bad weather, only bad clothing.” Providing clothing for all kinds of weather opens up endless possibilities for adventure.
- Keeping active builds the foundation for lifelong behaviors benefiting both humans and the environment.
- Children will want time with screens and cell phones. Nurturing their desire to be active outside and away from screens will set the foundation for a healthy balance of time with and without screens.

To Do

Encourage and support a wide variety of “safe risk” physical activities.

- Encourage risky play in natural areas like balancing on logs, hopping across streams, running on uneven ground, or climbing trees – within limits.
- Go up the slide of a play structure instead of down! Wiggle through narrow places. Balance on boulders or fallen trees.
- Introduce children to outdoor recreation in your community such as basketball, dance, soccer, tennis, hiking, biking, swimming, skiing, or skateboarding.



To Think About

Partially unsupervised time outdoors is healthy.

- Developing a risk/benefit mindset instead of a risk-aversion mindset can help ease your comfort about letting children explore independently. Yes, children can get injured (risk), but developing physical fitness and team collaboration is good (benefit).
- Independent navigation of the outdoor world develops children's confidence.
- Collaborative outdoor activities support children's mental health and promote teamwork.

To Do

Find safe places for children to explore on their own.

- Provide children with increasing freedom as they age. Let them walk to a neighbor's house, bike around the edge of the parking lot, or stroll around the block with a friend.
- Drop your child off a few blocks from home and have them walk home alone while you watch from a distance. Have them walk independently from one side of a park to the other.
- Make models of the neighborhood with blocks, cardboard, or cereal boxes.

Nature & Well-being | Early Elementary, Ages 6-8

**To Think About****Natural and recycled materials are good playthings.**

- Playing with natural or recycled materials and gently used toys sets the expectation that new is not necessarily better.
- Appropriate use of natural materials sets the stage for utilizing and not wasting consumable products.
- Cardboard boxes are great, inexpensive toys. Providing children with access to packaging materials for construction promotes ingenuity and a precursory understanding of reuse.

To Do**Make art with natural and recycled materials.**

- Build stick sculptures and fairy houses from natural or recycled materials.
- Practice nature art: leaf animals, symmetrical mandalas, or clay and mud animals.
- Choose to pick living things such as flowers only when they exist in abundance.

To Keep in Mind

No need to eliminate all risk from your child's life outdoors. When kids challenge themselves to climb a little higher, hold on a little longer, or walk a little farther, they gain an authentic sense of accomplishment. "I did it!"

Empathy & Resilience | Early Elementary, Ages 6-8

Create scaffolded activities that help children understand, appreciate and care for themselves, others, and the environment. Create daily practices of gratitude. Encourage positive self-talk when faced with new challenges or setbacks. Practice mindful breathing, taking pauses, and seeing things from others' perspectives.



To Think About

Making space to talk about emotions and feelings with your child is critical to developing empathy.

- Active listening, asking open-ended questions, and being open-minded about children's concerns is a great place to start.
- If asked about climate change, it's ok to acknowledge your own emotions and talk to your child about theirs. You can also talk about all the people working on solutions, from scientists to entrepreneurs.
- Climate change can be a difficult topic to discuss for people of any age. Acknowledging your feelings about it, even if it is sadness, is the first step to action.
- Individual experiences with climate change vary widely based upon location and circumstances. Exploring the experiences of others can keep you motivated to care and act.

To Do

Practice perspective taking, exploring emotions, and understanding others.

- Plan a time to do nothing. Just follow your child's lead. No cell phones, no agenda. Just time together.
- Play [emotion charades](#): children sit face to face with their caregiver. Take turns modeling an emotion and guessing the other's, while copying their facial expression.
- Watch some of the short videos made by the [Child Mind Institute](#) for ideas on learning basic age-appropriate mental health skills.
- Read stories and talk about the perspectives of the characters and how they felt or solved a problem. Check out your local public library and this reading list from [Cooperative Children's Book Center](#).

Empathy & Resilience | Early Elementary, Ages 6-8



To Think About

Finding daily delight fosters gratitude, builds resilience, and reduces stress and anxiety in your child.

- Like a muscle, your gratitude practice can be exercised, strengthened, and helpful throughout life.
- The treasures of nature – the veins on a leaf, the birds in a tree, the clouds in the sky, or the taste of an apple – can be an everyday source of joy that you share with your child.
- Even mundane tasks can be delightful with a mindset shift. (Whistle while you work!)

To Do

Instill a sense of delight and wonder in your child every day.

- Make a game of noticing things that delight you and your child as you go about your day. Play games like “I spy.”
- Keep a running list of things that spark your child’s curiosity. At mealtime, share things that made you laugh or smile.
- Create a gratitude jar and jot down things you and your family are grateful for. Share them weekly or monthly.
- Visit a special spot daily or observe a familiar tree or bush, noting seasonal changes in sounds, smells, and sights. Track your observations in a notebook or a [phenology calendar](#).
- Find delight in new worlds by borrowing books from your local library. If you don’t have a free library card, ask for help at the front desk.

Empathy & Resilience | Early Elementary, Ages 6-8



To Think About

Praising thoughtful and flexible behavior builds connection.

- Praising children's successes over perceived obstacles helps them to embrace new challenges rather than being fearful of them.
- Making mistakes and bouncing back from missteps models resilience.

Modeling care for yourself and community can take many forms.

- Modeling care can look like prioritizing your own health and well-being, connecting with nature, engaging in what energizes you, focusing on local issues, or practicing mindfulness with tools like the free and evidence-based [Healthy Minds Program app](#).
- It is easy to be all-consumed by caregiving duties, but modeling self-care and community care can be just as important for young children as modeling good manners.

To Do

Practice gratitude, kindness, and self-care.

- Build a gratitude word bank and add a word a day for everything you and your child are thankful for. This doesn't need to be fancy. A chalkboard or pen, paper, and tape will do.
- Practice random acts of kindness. Help your child notice ways to be kind and helpful to others: opening a door for another person, picking up a piece of trash, etc.
- Cut hearts out of paper and write messages of gratitude, thanks, or apology with your child. Deliver together and notice how it feels.
- Collect small, smooth rocks and paint each with something you are grateful for (sunshine, fish, rainbows). Deliver to a neighbor with a small note.

Encourage calming, downtime, and reflection.

- Practice mindful breathing by slowly breathing in and out for five minutes. Talk about plants breathing in the gases we breathe out, and how we are an interconnected system.
- See the [Kindness Curriculum](#) from the Center for Healthy Minds for more calming activities.

To Keep in Mind

You don't need to teach young children facts about climate change. Instead, meet them where they are, listen to their concerns, answer honestly, and nurture their curiosity about nature. Focus on positive climate solutions and build a trusting relationship to support their emotional well-being.

Hope & Collective Action | Early Elementary, Ages 6-8

Find tasks for children that contribute to positive climate action for your family. Give your child responsibility for taking care of family pets. Make a family commitment to help others in your community, at your church, museum, community garden, preschool, or contribute to clothing, food, or toy drives.



To Think About

Taking care of the nearby world is a precursor to taking care of your community and the larger world.

- Children's understanding of the world expands slowly. Focusing on home, school, and neighborhood sets the stage for shaping the wider world later on.
- We can help children understand how they are part of a larger community of people and living beings and that it is better for all of us if we act on behalf of that larger community.

To Do

Provide opportunities for children to understand and contribute to home, school, and neighborhood needs.

- Give children daily or weekly chores, such as sweeping the garage, vacuuming the rugs, or watering the plants.
- Put children in charge of turning off lights and checking to see if the thermostat is turned down.
- Conduct a one-day "waste audit" at your home with your family.

Create opportunities for you and your children to feel part of a community of caring people.

- Attend community meetings together or find ways for your family to advocate for better conditions in your area.
- Support your child in helping a neighbor or writing a letter.
- Participate in roadside cleanups.
- Help prepare food for a neighbor or for community events.
- Adapt the lemonade stand model, but give away seeds, extra produce, or words of encouragement.



To Think About

Caring for animals and growing plants gives children a sense of responsibility and develops empathy.

- In farming communities, it's a common practice for children to be given animal and garden responsibilities.
- What responsibilities make sense in your home, neighborhood, school, or community?

To Do

Find opportunities to let children practice caregiving.

- Have your child adopt and name a houseplant or plant a row of seeds in a small garden (at home or in the community).
- Encourage children to take care of animals. Increase responsibility as they age.
- Explore the responsibilities that go into taking care of animals who live in zoos or sanctuaries, or the work of tending to plants at botanical gardens or arboretums.
- Invite your child to help a friend or neighbor in need.
- Make a simple [bee hotel](#) together using materials you have at home.

Hope & Collective Action | Early Elementary, Ages 6-8



To Think About

School-age children need non-parent mentors to model care for the community and environment.

- Naturalists, teachers, and coaches have expertise that you may lack; taking advantage of their connections can provide additional support.
- Environmentalists often cite two prominent influences from their early years: access to play in natural places and adults who modeled care for the natural world.¹⁷
- Children may find that their peers aren't as likely to take care of nature and their community as they are. As their peers' influence becomes more prominent, their values of caretaking and collective action may need reinforcement.
- Being praised for standing up for their values helps children recognize their ability to make a positive difference in their community.

To Do


Find weekend, after-school, and summer activities that encourage ways to bond with the natural world.

- Do a park clean-up where children learn that "many hands make light work." Encourage your children to invite their friends to join them.
- Collect data for citizen science projects as a family. (Check out [Project Feederwatch](#) and the app [Seek](#)). You and your children can contribute to protecting our natural world by learning more about it.
- Select programs that encourage exploration, natural play, and community service.

To Keep in Mind

Don't force your children to participate in collective action opportunities like political marches or demonstrations in hopes of inspiring engagement if you sense anxiety, fear, or unease, or if you have any concerns about their safety and well-being. While it is tempting to want to model engagement, it can also backfire if your child is anxious or ill at ease.

17. Chawla, L. (2020). Childhood nature connection and constructive hope: A review of research on connecting with nature and coping with environmental loss. *People and Nature*, 2(3), 619–642. <https://doi.org/10.1002/pan3.10128>

A photograph of a woman with blonde hair and glasses, wearing a blue shirt, smiling as she looks down at a young girl. The girl, with brown hair and a purple butterfly hair clip, is wearing a white shirt with purple lace and is holding a small green vegetable (possibly a cucumber or zucchini) near a brown stuffed animal. They are outdoors, with green foliage visible in the foreground and background.

"Children need
access to nature
the same way they
need good nutrition
and adequate sleep."

– National Wildlife Federation

TIPS & TOOLS FOR MUSEUM STAFF

Why Children's Museums Should Care About Climate Change

What Our Children Need to Succeed in a Warming World

Summaries by Category & Age Group

Education & Programs

Exhibits

Marketing & Communications

Facilities & Operations

Visitor Services

WHY CHILDREN'S MUSEUMS SHOULD CARE ABOUT CLIMATE CHANGE

Climate change is the single biggest threat to children's health worldwide. As children age, they pay attention to who is looking out for them. As cultural organizations dedicated to the well-being of children and families first and foremost, children's museums are uniquely suited to take sustainable, regenerative, and visible climate actions. Museums can do so by reducing their emissions, modeling actions for others, communicating in age-appropriate ways that build resilience and hope, and by helping families learn what they can do to support their children and the earth.

Museums understand children

At the heart of this Playbook is the work children's museums do best: Letting children learn and flourish through play and problem-solving in collaborative, inventive, and supportive environments. The Playbook leverages museum work while helping museums and caregivers shift their focus to climate solutions. Our aim is to support museum professionals to address the challenges facing children and families in a warming world.

Few resources exist to help caretakers of very young children navigate this new terrain in developmentally appropriate ways. This Playbook, created by and for early childhood educators and museum professionals, can help fill the void.

Supporting the intersecting developmental needs of young children in the age of climate change

More people than ever are concerned about climate change, with 85% of youth aged 16–25 reporting being at least moderately worried.¹⁸ To remain trusted leaders for young families, museums should demonstrate climate leadership.

This Playbook offers strategies to address climate change while integrating its three focus areas – Nature & Well-being, Empathy & Resilience, and Hope & Collective Action – into your museum's education, exhibits, operations, visitor services, and communications. It also supports childhood development by fostering self-care, connection, and well-being, helping to build lasting relationships with Earth's interconnected systems. Use it to collaborate and contribute to new climate solutions.

18. Lewandowski, R. E., Clayton, S. D., Olbrich, L., Sakshaug, J. W., Wray, B., Schwartz, S. E. O., Augustinavicius, J., Howe, P. D., Parnes, M., Wright, S., Carpenter, C., Wiśniowski, A., Ruiz, D. P., & Susteren, L. V. (2024). Climate emotions, thoughts, and plans among US adolescents and young adults: A cross-sectional descriptive survey and analysis by political party identification and self-reported exposure to severe weather events. *The Lancet Planetary Health*, 8(11), e879–e893. [https://doi.org/10.1016/S2542-5196\(24\)00229-8](https://doi.org/10.1016/S2542-5196(24)00229-8)



WHAT CHILDREN NEED TO SUCCEED IN OUR WARMING WORLD



SUMMARIES BY CATEGORY & AGE GROUP

Nature & Well-being

When young children have a foundation of positive nature experiences that support their mental and physical health, they are more likely to become engaged environmental stewards as they grow older.¹⁹

Birth to Age 3, Infants & Toddlers

Activate children's senses and spark their curiosity by incorporating living things and natural materials into your programs and spending more time outdoors, whether in an urban plaza, nature trail, beach, or park.

Ages 3-6, Preschool

Encourage children to explore the natural world in ways that promote well-being and incremental independence. Get to know your wild animal neighbors, and understand that we are their neighbors, too. Nature sparks children's curiosity; follow their lead. Offer programs outside in all kinds of weather.

Ages 6-8, Early Elementary

Help children move out of the family and into the wider community with the goal of making the neighborhood in and around your museum a familiar, beloved place.

Empathy & Resilience

When young children develop tools to value and express their feelings, show gratitude, and practice respecting others, they strengthen their capacities for empathy and resilience. These skills enhance well-being during challenging times and help children care for themselves, each other, and the natural world.

Birth to Age 3, Infants & Toddlers

Activate children's senses and spark their curiosity by incorporating living things and natural materials into your programs and spending more time outdoors, whether in an urban plaza, nature trail, beach, or park.

Ages 3-6, Preschool

Model kindness through language and actions, gentle touching of small pets, and careful observation of plants and animals. Notice similarities to help foster ideas of interconnectedness. Encourage children's agency as they explore, collaborate, make mistakes, and care for themselves and others.

Ages 6-8, Early Elementary

Praise children when they make connections with, show compassion to, or help others – especially those outside of their immediate circle. Model self-care and nurture a positive self-view. Encourage children to test themselves through healthy risk-taking and problem-solving. Look for what motivates kids, help them set goals and work toward achieving them.

Hope & Collective Action

When young children are supported and inspired, they feel empowered to help and are more likely to maintain a sense of hope and optimism as they grow. When they take action (like picking up garbage or planting a community garden) as part of a family or group, they gain skills and understanding about what it means to be part of a community.

Birth to Age 3, Infants & Toddlers

Provide experiences that help children develop a sense of hope for the future and joy in nature and community. Let them take care of plants, animals, and other people. Inspire caregivers and children to take positive climate action in their homes, neighborhoods, and communities. Working together is our most effective approach to addressing climate change.

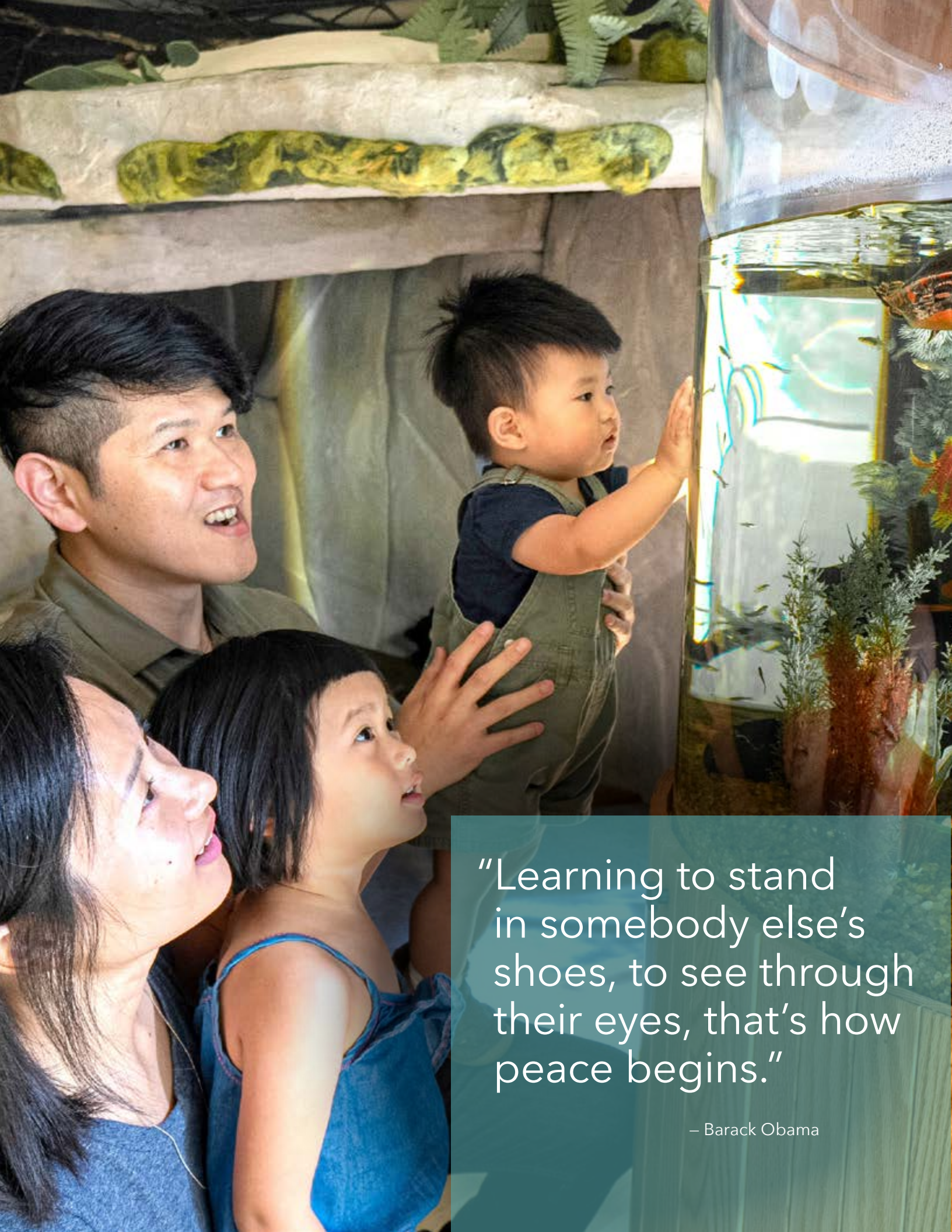
Ages 3-6, Preschool

Provide opportunities that encourage visitors to work together to solve challenges. Model for children how to help and care for neighbors. Help parents organize to support a community project or environmental effort.

Ages 6-8, Early Elementary

Give children, families, and museum staff the opportunity to help make the neighborhood and local community a better place. Encourage people to think broadly about community and who and what that includes. Provide inspiration by showcasing children who have made a difference in their communities.

19. Chawla, L. (2020). Childhood nature connection and constructive hope: A review of research on connecting with nature and coping with environmental loss. *People and Nature*, 2(3), 619–642. <https://doi.org/10.1002/pan3.10128>



"Learning to stand
in somebody else's
shoes, to see through
their eyes, that's how
peace begins."

– Barack Obama

EDUCATION & PROGRAMS

Infants & Toddlers, Birth to Age 3

Nature & Well-being
Empathy & Resilience
Hope & Collective Action

Preschool, Ages 3-6

Nature & Well-being
Empathy & Resilience
Hope & Collective Action

Early Elementary, Ages 6-8

Nature & Well-being
Empathy & Resilience
Hope & Collective Action

Nature & Well-being | Infants & Toddlers, Birth to Age 3

Activate children's senses and spark their curiosity by incorporating living things and natural materials into your programs. Spend more time outdoors, whether in an urban plaza, nature trail, beach, or park.



To Think About

Think outside the museum!

- The outdoors stimulates children's senses well beyond what they can experience indoors. Think about the warmth of the sun, a blowing breeze, the scent of mud and plants, the feel of grass and water, or the sound of insects.
- Even concrete courtyards allow children to feel the sun, hear the birds, and notice shifts in temperature.
- If outdoor access is limited, bringing more natural materials and living things into your indoor spaces is a great alternative.
- Many activities that can be conducted inside the museum can be done outside as well.

To Do

Model for parents how they can enjoy being outdoors with young children in all kinds of weather.

- Lead guided stroller walks outdoors.
- Explore the landscaping and plants at the entrance to the museum. Look for insects, animal nests, and other small wonders. Touch flowers, look closely at bugs, and even jump over puddles!
- Pick flowers or grasses to dip in paint or gather materials for a nature collage.
- Bring watering cans and spritzers to give plants a drink as you walk.
- If conducting off-site outdoor programs for young learners, make sure caregivers are prepared to change diapers outside.

Bring the outside inside in small ways.

- Add seeds, rocks, bouquets of flowers, plants, a fish tank, and other living things to your art studio and classrooms.

Nature & Well-being | Infants & Toddlers, Birth to Age 3



To Think About

Parents of babies and toddlers may have concerns about our warming world.

- Emphasizing taking one step at a time can relieve caregivers of the guilt of not being perfect. Maybe they could try public transportation, or bike to the park instead of driving.
- Reminding caregivers of the many benefits that early nature experiences have on children's well-being and future climate attitudes reinforces the importance of time in nature.

To Do

Invite adults to observe their young child's reactions as they encounter various natural materials (shells, pine cones, stones, sand, water, grass, or mud).

- Encourage them to start a conversation by saying something like, "Look at all the small pine cones you found! Let's touch each one!" or "Oooo, what does the sand feel like on your toes?"

Form partnerships.

- Are there local environmental education organizations you can partner with to provide outdoor programs?
- Possible partners could include local gardens, urban farms, natural resource offices, and food justice programs.

To Keep in Mind

Teaching children to connect with and love nature is age-appropriate climate education. You don't need to teach young children facts about climate change. Overwhelming young children with bad news about the environment can turn them off to nature just when they should be appreciating it most. Help caregivers understand that connecting young children with nature is an age-appropriate conservation and climate action. It lays the foundation for future caring and action.

Empathy & Resilience | Infants & Toddlers, Birth to Age 3

Fostering empathy and self-reliance begins at birth. Use language and actions that model self-care and respect for yourself and others with the youngest visitors. Create cozy spaces for quiet breaks, and model gentleness and kindness in your programming. Train staff to show compassion to others, provide empathy training, and incorporate expectations of kindness into your daily operations and museum culture.



To Think About

Kindness is a practice.

- Young children use their behavior more than words to communicate their emotions and needs; they are constantly watching every action. Modeling kindness to staff, visitors, plants, and animals demonstrates respect for all.
- Talking about and showing gentleness, kindness, and respect for others models these behaviors for caregivers and their children.

To Do

Create caregiver/child activities that model kindness to oneself and others.

- Discuss ways to show kindness to family, friends, yourself, or pets, like picking flowers, saying thank you, or giving hugs.
- Model self-kindness by saying, "Oops, I spilled the beads. That happens. Let's clean up together."
- Offer a dolly or plastic animal bath time program where young children and caregivers wash baby dolls or animals in small tubs of water. Use language that models care.
- If you house live animals, let children watch staff feed and change animal bedding as part of a program. Use the animal's name and talk about their personal preferences as you work. "This is Frank. He likes carrots more than grapes."

Empathy & Resilience | Infants & Toddlers, Birth to Age 3



To Think About

Children need words to label their emotions.

- Young children are learning to express feelings. Labeling your emotions, like saying, "It makes me happy to see you having fun," lets children know they are seen.
- Modeling and labeling a wide range of emotions helps children realize that all feelings are valid. "It looks like you're sad that the program is over."

To Do

Play with mirrors.

- Have caregivers and children (ages 2-3) sit in a circle. Using mirrors, suggest an emotion, such as sad, happy, angry, or mad. The facilitator makes that facial expression and then asks the child to repeat it while looking in the mirror.



To Think About

Learning sign language builds early agency.

- Children can learn sign language before they can use words, beginning as early as four months old.
- Using sign language helps children learn that they are seen, valued, and have agency before they have verbal language skills.

To Do

Offer a baby sign language class.

- Teach simple signs like eat, hungry, milk, water, please, thank you, I love you.
- Check out babysignlanguage.com.

Empathy & Resilience | Infants & Toddlers, Birth to Age 3



To Think About

Offering programs that foster low stakes risk-taking and problem-solving helps children build confidence and independence.

- Learning to take risks and solve problems independently begins in a child's first two years.
- When children are given more latitude to explore independently, they develop greater problem-solving capacities.²⁰
- When children take the lead, they develop agency and belief in their own capacities.

To Do

Create open-ended play opportunities that promote problem-solving and risk-taking, with no right or wrong solutions.

Consider including:

- Constructive play toys, building blocks, or shape sorters.
- Memory games.
- Grouping/sorting activities.
- Hide & seek opportunities.

Use language that builds children's confidence in navigating the world.

- Phrases like, "I like the way you're thinking about that," or "You've found an interesting solution," help convey your belief in their problem-solving abilities.

To Keep in Mind

For very young children, read stories about resilient kids or picture books that inspire wonder, empathy, and a sense of connection with nature, rather than factual books about climate change.

20. Keen, R. (2011). The Development of Problem Solving in Young Children: A Critical Cognitive Skill. *Annual Review of Psychology*, 62(Volume 62, 2011), 1-21. <https://doi.org/10.1146/annurev.psych.031809.130730>

Hope & Collective Action | Infants & Toddlers, Birth to Age 3

Provide experiences that help children develop a sense of hope for the future and joy in nature and community. Let them take care of plants, animals, and other people. Inspire caregivers and children to take positive climate action in their homes, neighborhoods, and communities. Working together with others is our most effective approach to addressing climate change.



To Think About

Every family has a different comfort level with nature experiences; consider multiple approaches to getting families comfortable outdoors.

- Spending time outdoors in the sun and fresh air every day provides a simple way to connect to nature.
- Benches, shade, and fun activities make the outdoors more friendly and welcoming.
- Providing clothing for all weather or heated spaces for your programs ensures families are comfortable.

To Do

Offer museum-sponsored infant and toddler programs outside.

- Programs like Babies in Backpacks or Toddlers in Tow send the message that museums and families work together to help children bond with nature. These programs can be run in local parks, at the museum, or in the neighborhood.

- Organize neighborhood scavenger hunts.

Provide indoor and outdoor toddler play activities that support diverse physical motion.

- Offer crawl-throughs, gentle slopes, water play, and safe, climbable structures.
- Introduce children to outdoor textures like wood chips, grass, smooth pavement, or pebbles.

Hope & Collective Action | Infants & Toddlers, Birth to Age 3



To Think About

Connecting with others builds community.

- Parents of young children are often isolated and yearning for connection with other caregivers. Your museum can be the catalyst for new friendships through welcoming activities.
- By connecting with families they don't know, caregivers can begin to expand their understanding of the people in their community and potential actions they might take to care for those around them.

To Do

Create and facilitate program opportunities that emphasize safety, comfort, and connection for parents.

- Provide ample opportunities for parents to talk and collaborate with each other and build friendships.
- Remind caregivers that the most important thing they can do for infants and toddlers is to create a safe, comfortable world.
- Help caregivers remember that learning to trust others is a helpful skill for children to learn.



To Think About

Sharing is a learned social skill that has its roots in infancy.

- Sharing is a precursory pro-climate skill, yet children in this age group are not developmentally ready to master the concept. While it is important to begin modeling this skill, don't be alarmed when it doesn't work.

To Do

Have lots of manipulatives available for children to share.

- Remind caregivers about the value of practicing sharing as a foundational experience.
- Provide receptacles for recently mouthed toys and objects. We want to share toys but not germs!

To Keep in Mind

Caregivers of very young children are adapting to many changes and feel a strong sense of responsibility about doing the right things. Be gentle. Make suggestions. Emphasize making one manageable change at a time. Recognize that they have limited time. Mention the value of meeting parents with children of similar ages.

Nature & Well-being | Preschool, Ages 3-6

Encourage children to explore the natural world in ways that promote well-being and incremental independence. Get to know your wild animal neighbors, and understand that we are their neighbors, too. Nature sparks children's curiosity; follow their lead. Offer programs outside in all kinds of weather.



To Think About

Children who have opportunities to care for and bond with local wildlife feel more connected to nature, building the foundation for environmental stewardship as they grow.²¹

- Returning to the same outdoor space regularly will create a sense of connection with that space.
- Children this age are learning who's who among their wild animal neighbors and beginning to mimic their behaviors and sounds.
- Who are the wild animal neighbors living in your community? Focusing on the birds, bugs, fish, and mammals that live nearby, rather than the more iconic wildlife from other continents, helps your child build connections with their own community.

To Do

Explore the sounds and behaviors of your wild animal neighbors with puppets, costumes, sing-alongs, hand play games, and story time.

- Share nature-based poems, stories, and songs about your local landscape, plants, and animals. Include content from Indigenous people in your area.
- Help families learn about the animals in the museum's neighborhood via walking programs or tours.
- Organize an animal or plant scavenger hunt in a nearby park or your favorite natural space throughout the seasons.

21. Kellstedt, D. K., Suess, C. S., & Maddock, J. E. (2024). Influences of Outdoor Experiences During Childhood on Time Spent in Nature as an Adult. *AJPM Focus*, 3(4), 100235. <https://doi.org/10.1016/j.focus.2024.100235>



To Think About

Your museum's programming can support children's curiosity in nature.

- Outdoor walks or activities around your building are a good place to start if you don't have outdoor space.
- Children enjoy finding natural items outdoors and organizing them by their different textures, colors, patterns, and sizes.

To Do

Collect and display the natural world in the museum.

- Gather stones, feathers, shells, or pine cones to keep, use in craft projects, or add to a nature display. Provide hand lenses for viewing details.
- Provide a series of wooden shelving/shadow boxes where children can display natural items they encountered in your outdoor area (like they would display art they made at the museum).
- Display natural items children collect – even temporarily – to show you value their discoveries.

To Keep in Mind

Don't brush off or minimize children's questions. Answer honestly and with a sense of hope. While you don't want to trivialize their concerns, you don't want to add to their anxiety or create feelings of mistrust when they begin to understand the complexity of the world. Try saying, "Yes, I heard about that too and I'm concerned. There are a lot of adults working on these problems – and when you are older, you can help, too. For now, how can we make things better in our neighborhood?"

Empathy & Resilience | Preschool, Ages 3-6

Model kindness through language and actions, praising children when they demonstrate kind behaviors or words. Model gently touching small animals and careful observation of plants and animals. Notice similarities, and say things like, “Look, the bird drinks water, just like you.” Encourage children’s agency as they explore, collaborate, make mistakes, and care for themselves and others.



To Think About

Children are born with the capacity to love, to move, and to play using all of their senses.

- Sensory exploration of natural materials activates the nervous system and provides stimulation in children’s brains that both excites and calms.

To Do

Create sensory activities that incorporate dirt, sand, water, and storytelling.

- Indoors or outdoors, lay out a tarp and place natural materials on top. Have children close their eyes while they touch each item and describe how it feels and where it might have come from.
- Have children draw a picture of one of the objects and tell a story about each material or critter, while adults write down their story.



To Think About

Building trust in a reliable adult builds security and confidence, helping children to test their limits and explore their bodies, imaginations, and environment.²²

- You, most of all, can help lay the foundation for children of this age to navigate their inner and outer worlds.
- Children's experiences in the world will be different from yours. Using "yes, and" statements encourages exploration and builds upon their ideas.

To Do

Play games that explore inner and outer worlds.

- Practice animal poses, and encourage children to breathe using only their nose, inhaling and exhaling, and feeling calm in each pose.
- Play emotions charades. Have children sit face to face with their adult. When one person acts out an emotion, have the other guess that emotion while copying each other's facial expressions.
- Encourage open-ended play in parks, museums, and home. Follow children's lead, foster their curiosity, and embrace their imagination.

22. Durden, T. (2011). Making it Happen: Building Positive Relationships with Children. <https://extensionpubs.unl.edu/publication/hef601/2011/pdf/view/hef601-2011.pdf>

Empathy & Resilience | Preschool, Ages 3-6



To Think About

Positive language reinforces a child's resiliency and agency.

- Young children look to adults for reinforcement. When you assume a child will be alright after a fall, they learn to trust themselves and see themselves as resilient. If you assume that they are hurt and need help, they may learn to rely on others before themselves.

To Do

Try out language like:

- "It looks like you are making smart decisions. Tell me how this feels."
- "I like the way you are thinking about that. Tell me more about your ideas."
- "I'd like to know more about how you solved this."
- Before assuming a child needs help, ask, "Are you hurt? Would you like a hug?"



To Think About

Encouraging children's natural inclinations to learn through play is a positive step toward a better future.

- Children's innate curiosity propels them to explore and ignites their imagination to envision new problems, solutions, communities, and worlds.²³
- Imagining and documenting how other critters live and learning what they need to survive helps children develop empathy skills. This practice helps them see that everyone has similar needs.

To Do

Imagine and talk about who lives in other places (in trees, under water, etc.).

- Look for different animal homes in your environment like ant hills, bird houses, spider webs, etc. Talk about what your homes have in common.
- Have children make up a story about a real or imagined animal or plant who lives nearby. Write it down as they speak.
- Create a gratitude tree or station where children can create a special drawing, message, or thank you for someone who is important to them.

To Keep in Mind

Don't worry if you forget to be kind to yourself or others sometimes; it happens to everyone. Kindness is a mindset, and each day offers new chances to grow.

23. Keen, R. (2011). The Development of Problem Solving in Young Children: A Critical Cognitive Skill. Annual Review of Psychology, 62(Volume 62, 2011), 1-21. <https://doi.org/10.1146/annurev.psych.031809.130730>

Hope & Collective Action | Preschool, Ages 3-6

Provide opportunities that encourage visitors to work together to solve challenges. Model for children how to help and care for neighbors. Help parents organize to support a community project or environmental effort.



To Think About

Pointing out environmentally sustainable behaviors in the museum is helpful for children and adults.

- Encouraging material reuse and using environmentally friendly materials normalizes caring for the earth.
- Using materials and supplies mindfully raises awareness about using only what is necessary. (For example, you could pre-cut tape for an activity.)

To Do

Create programs or add signage that model what parents could be doing at home.

- Make recycling systems prominent and usable by preschoolers. Use symbols and not just words.
- Create programs and practices that encourage children to think about how they can help the earth, like turning off the lights and using water carefully.
- Make plant-based snacks.
- Create eco-friendly gifts.
- Introduce composting and easy ways to try it at home.



To Think About

Bonding with and talking about nature is the first step toward climate-friendly behavior.

- There's no need to talk directly about climate change with kids in this age group unless they ask about it. (And if they do, use hopeful, solutions-oriented language.)
- The materials you use communicate your values. Limiting use of plastics and non-natural materials and focusing instead on natural materials helps establish a connection between nature and children even when they're inside.

To Do

Design opportunities for children and parents to interact with nature both inside and outside.

- Consider offering [Tinkergarten](#) programming for preschoolers and their parents.
- In supermarket exhibits, add "locally grown" symbols and maps to showcase where food comes from, and who is growing it.
- Create a "Wish Tree" where children and caregivers can share their hopes for the future or their hopes for the earth.
- Use drawing, writing, or video to encourage children to share their ideas.

Hope & Collective Action | Preschool, Ages 3-6



To Think About

How can you encourage, organize, and support collective action?

- As high-trust organizations, museums have the opportunity to bring people together around environmental issues impacting children's health and well-being.
- Visitors want to be invited in to support the museum's sustainability efforts, especially if you can make it fun.
- Visitors experience climate change impacts and concerns differently, and sensitivity to their needs and worldviews is critical.
- Each community's relationship with the changing climate is unique. Talking about the changing weather and need for resilience may be more effective for some communities than speaking directly about climate change.
- Focus groups could help determine ways your organization might lead family-based collective actions.

To Do

Create programs that encourage or spotlight collective action geared towards groups of families.

- Start a neighborhood trash collection, develop community gardens or parks, or take local field trips via public transportation.
- Create a community art project that encourages children and families to bring something from home that can be repurposed.
- Showcase examples (via video, drawings, or signage) of children making a difference in their communities. These examples inspire children and show adults what children are capable of.
- Offer seeds, plants, small trees, and farms (or even animal adoption events) to increase engagement with the natural environment at home.
- Connect visitors with organizations and free resources available in the community, such as libraries that rent out power tools, or free stores and exchanges.

To Keep in Mind

Don't forget to think about what happens to "make & take" projects after visitors leave the museum. Use a sustainability lens as you select your program materials and consider what happens to "left-behind" projects. Once recyclable plastics have been glued or painted, they can no longer be recycled.

Nature & Well-being | Early Elementary, **Ages 6-8**

Help children move out of the family and into the wider community with the goal of making the neighborhood in and around your museum a familiar, beloved place.



To Think About

Building comfort with the local neighborhood supports well-being.

- Placemaking (understanding where you live, becoming familiar with your neighborhood, and feeling you belong) is a biological impulse for children ages 6-8.²⁴
- Placemaking outdoors is one way children connect with the natural world. This is a precursor to environmental behaviors in adulthood.

To Do

Explore the area around your museum year-round.

- Take walking field trips to find urban weeds, walk along the top of low stone walls, meet storeowners, do scavenger hunts, observe where birds nest when there aren't trees, explore temperature differences in the shade and in the sun, and play hide-and-seek in local parks.
- Bring an egg carton on walking field trips to collect whatever sparks children's curiosity.

24. David, S. (2001). Children's Special Places. Wayne State University Press. <https://wsupress.wayne.edu/9780814330265/>

Nature & Well-being | Early Elementary, Ages 6-8

To Think About

Finding multiple ways to play in and with nature is important for children.

- Collecting, observation, pretend play, and active play in nature each offer different ways of accessing the outdoors and becoming comfortable with nature.
- Letting children choose helps them exercise their agency while making their experience more meaningful and enjoyable.

To Do

Explore the natural world around you every day.

- Observe butterflies, honeybees, worms, spiders, and other animals that live in your area.
- Use books with photos, puppets, and costumes (wings, headbands, or tails) for indoor play.
- Walk outside and look for living things under rocks, in the dirt, on the beach, and around plantings.
- If safe to do so, walk barefoot to connect with the earth, feeling its textures and temperature.



To Think About

Featuring plants and animals who are endangered in your community helps build empathy for animals and their needs.

- Learning about why a plant or animal is endangered can lead to caring for their habitats in your community.
- Exploring who depends on who in your local ecosystem is a precursor to understanding interconnection between all species.

To Do

Offer a program to support an at-risk or endangered creature in your community.

- Are there monarch butterflies, manatees, or armadillos near you?
- Include books, puppets, costumes, songs, and a craft in your program.
- Start a milkweed planting program to offer food to monarch butterflies.
- Focus on what the animal needs to be healthy; no need to talk about dire circumstances the animal may be facing.

Nature & Well-being | Early Elementary, Ages 6-8

To Think About

Promoting children's curiosity and wonder supports their agency and builds skills in systems thinking.

- Letting children follow their curiosities ignites their passion and leads to real engagement.
- Wildlife, plants, the weather, sand, soil, and water are all things that spark children's natural curiosity.
- Sharing what you're curious about models lifelong learning and individualized interests.
- There's no need to have all the answers. Scientists ask a lot of curious questions!

To Do

Listen and share.

- Listen to children's thoughts and questions about plants and animals and ask follow-up questions.
- Share your own musings. You could say things like: "I wonder where that beetle spent the night." "I wonder why this leaf has spots." "I wonder how these birds know where to find nesting materials."



To Think About

What we do impacts our plant and animal neighbors.

- All animals (including humans) need safe places to live with their families, clean air to breathe, the right kind of food to eat, and healthy water to drink.
- Do your programs reflect the ways that humans and nature are interconnected?

To Do

Look for connections and relationships.

- Show images of food chains and talk about who eats who. Start conversations by saying things like, "Let's explore who relies on these insects for food," or "Let's name all the animals that might live in this field."
- Identify the objects in a room that are made of wood or plants.
- Play the [Web of Life Game](#) to spark discussion about how everything is connected.
- Talk about how human actions can help nature. Give examples like planting flowers for bees and butterflies, cleaning up litter to protect wildlife, and creating brush piles to provide shelter for animals.

To Keep in Mind

Don't worry about knowing every animal name or natural process. Sharing your enthusiasm and showing genuine interest in a child's thoughts and discoveries matters most. Stay curious!

Empathy & Resilience | Early Elementary, Ages 6-8

Give children, families, and museum staff the opportunity to help make the neighborhood and local community a better place. Encourage people to think broadly about community and who and what that includes. Provide inspiration by showcasing children who have made a difference in their communities.



To Think About

Building Empathy & Resilience is one of the most effective ways to prevent anxiety and depression in young children.²⁵

- These are easy skills for adults to model. When practiced, noticed, and celebrated, kindness and empathy spread and build resilience.

To Do

Offer guided gift-making programs.

- When helping kids think about making or giving a gift, have them reflect on the receiver's needs and interests, then make a gift that fits.
- Create coupons offering kind gestures like "I will give you a hug," "I will make you a sandwich," or "I will read you a story."

Read and offer books about resilience and empathy.

- [Resilience Crew](#), [Alpaca](#), [Weathering the Storm](#), [The Rabbit Listened](#), [Outside In](#), and [The Most Magnificent Thing](#) are good places to start.
- Set up a kindness library filled with multicultural books that demonstrate kindness. Check out these resources from [Black Rep 4 Kids](#).

25. Baughman, N., Prescott, S. L., & Rooney, R. (2020). The Prevention of Anxiety and Depression in Early Childhood. *Frontiers in Psychology*, 11. <https://doi.org/10.3389/fpsyg.2020.517896>



To Think About

Modeling positive language, self-care, and care for animals builds empathy.

- When you use language that demonstrates you care for yourself, and act in ways that demonstrate you care for others, you model that those behaviors are connected.
- Pretending to be an animal helps children role-play and build empathy toward other species.

To Do

Try making animal poses together.

- Using [animal flash cards](#), have children organize five cards in order of the animals they like most to least, then mimic each animal's pose, and talk about what each animal needs to survive, creating connections to their own life and empathy for animals who are not furry.
- If you have plants and animals in your museum, talk to the plants when you water them, or thank the animals for their service when you work with them. Call them by their names.

Empathy & Resilience | Early Elementary, Ages 6-8



To Think About

Children feel seen when their talents are noticed, encouraged, and shared. Acknowledging their strengths in front of them builds confidence.

- When you let children's interests guide you, you encourage their gifts and support them in sharing their talents with others.
- Sharing skills nurtures a positive self-image and supports children in understanding each person's uniqueness and value. It helps children learn that we all have strengths and gifts that can be complementary. (Say things like, "I am good at drawing, you are good at writing, and we can help each other.")

To Do

Offer time and prompts for reflection.

- No matter the activity, provide time for reflection. Using positive language is even more impactful when children have accomplished something they have purposefully worked toward.
- Have children fill in the blanks to prompts like "I can do things like _____," or "I need the most help with _____," to build their self-awareness.
- End programs by recognizing each child's gifts: "I am proud of Andy for being a good friend today."

Empathy & Resilience | Early Elementary, Ages 6-8



To Think About

Persevering and overcoming obstacles builds confidence.

- Encouraging children to break out of their comfort zones helps them get comfortable with trying new things.
- Working through or even struggling through something new or challenging builds resiliency, self-reliance, and a growth mindset.

To Do

Share mistakes you have made with humor.

- Create a collection of visitor “mistakes” on a chalkboard with lessons learned to show that making mistakes is the best way to learn.
- For example, “I made three paper rockets before I made one that worked. It was fun to find the best design.”
- Reward children for their effort, not their results.

To Keep in Mind

Don't insist that children consider your feelings as equal to their own when modeling empathy. Though they are growing more concerned about others, children in this age group are still intensely self-focused.

Hope & Collective Action | Early Elementary, Ages 6-8

Give children, families, and museum staff the opportunity to help make the neighborhood and local community a better place. Encourage people to think broadly about community and who and what that includes. Provide inspiration by showcasing children who have made a difference in their communities.



To Think About

Caretaking for the earth can expand into the neighborhood and community.

- Children between 6 and 8 are moving from the protected world of the family out into the wider social world.
- Honoring this transition encourages increments of independence and responsibility.

To Do

Design programs that take children to local places that they might not normally visit.

- Visit places like wetland parks, landfills, or international food markets.

Recruit frequent visitors or children with high interest to help with caretaking in the museum.

- Invite children to help with animal care and feeding.

Encourage children to share ideas they have about making the museum more environmentally friendly.

- Offer a talkback board to collect kids' ideas.
- Offer low-commitment ways that children can care for the museum, like returning materials to bins, sweeping with child-sized brooms, or taking lost & found items to the front desk.
- Offer families the opportunity to share their ideas in a family environment focus group.



To Think About

Family participation in museum or neighborhood action programs builds a sense of belonging.

- You can offer or recommend clubs, after-school programs, or weekend drop-off programs.
- Some programs even offer opportunities for children to be independent of their caregivers.

To Do

Create nature clubs for children that focus on developing environmental skills connected to their interests.

- Watch and count birds in local parks, organize neighborhood clean-up teams, or paint murals on the walls of consenting local store owners.

Engage with your local planning department about new projects.

- Perhaps they have new projects that could benefit from family input gathered at the museum.
- Engage children and their caregivers in sharing their ideas and opinions for future local parks, building projects, or challenging city issues.
- Organize meetings with government officials and museum visitors to discuss how municipalities can address children's interests, needs, and concerns.

Hope & Collective Action | Early Elementary, Ages 6-8



To Think About

Recognizing that each living creature – plant and animal – is valuable and interconnected helps change attitudes and behaviors.

- Many adults learned as children that human beings are the most important creatures on Earth.
- Disrupting the hierarchy where humans dominate is challenging. Describing animals and the natural world as “more than human” is one way to start.
- Staff reading groups build connection. Consider reading *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge, and the Teachings of Plants*, by Robin Wall Kimmerer, or reviewing these resources from [The Wild Center](#).

To Do

Introduce children and families to Indigenous practices that value and honor animals, plants, and humans equally.

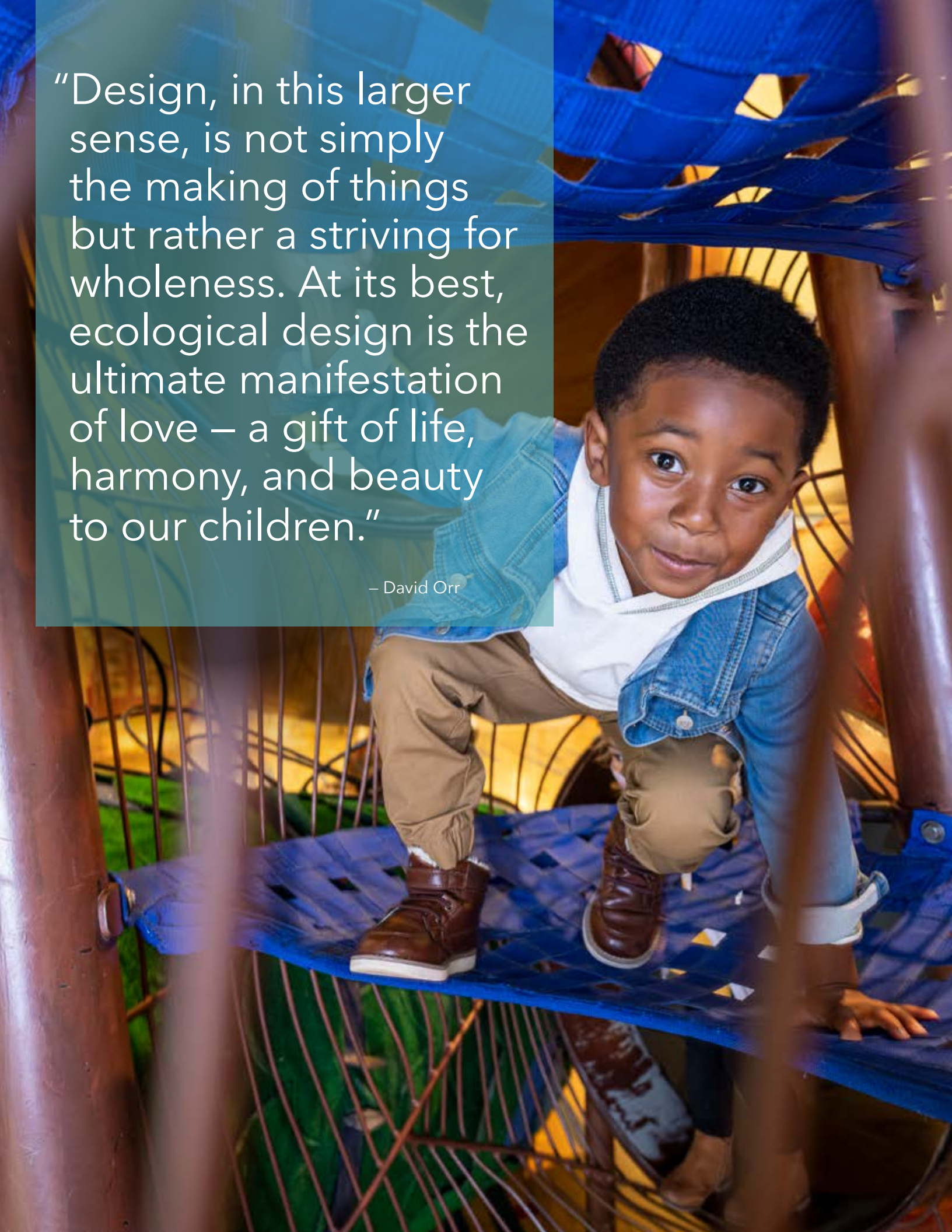
- Weave the concept of interconnectedness into your programming.
- Help children understand the importance of all species and how each one contributes to a healthy and balanced Earth.
- Thank people from Indigenous cultures for sharing their knowledge and practices of nature stewardship with people from non-Indigenous communities.
- Include Indigenous voices in your decision-making at the community advisory level.
- Create exhibits and programs that highlight Indigenous wisdom and local expertise.
- Include stories by Indigenous people that focus on valuing all creatures in your story time. See Appendix C for examples.

To Keep in Mind

Don't talk about doom and gloom scenarios when kids bring up climate change or other environmental problems. Instead, focus on the positive things people are doing to help (including the actions your museum is taking) and encourage them to enjoy nature.

"Design, in this larger sense, is not simply the making of things but rather a striving for wholeness. At its best, ecological design is the ultimate manifestation of love – a gift of life, harmony, and beauty to our children."

– David Orr



EXHIBITS

Nature & Well-being (Birth to Age 8)

Empathy & Resilience (Birth to Age 8)

Hope & Collective Action (Birth to Age 8)

Create spaces that contain as many natural materials and living things as possible. This will help children reap the benefits of connecting with nature, even indoors.



To Think About

Using natural materials as much as possible helps connect children to nature.

- Natural materials have a greater variety of textures, smells, temperatures, and weights than items made from plastic and are much more stimulating to children's senses.
- Could your museum incorporate more natural materials? Are there ways to minimize plastic use or incorporate real wood, stone, fabric, glass, and metal in construction?

To Do

Learn about constructing with natural materials.

- Check out greenexhibits.org for information.
- Look outside of the museum field and attend a natural building workshop.
- Inside or out, provide loose natural items for children to explore. Consider offering river rocks, logs, tree cookies/slices, feathers, shells, animal furs, and bones.
- Provide buckets, baskets, wood trays, and even small tweezers and small sorting cups to encourage children to touch, collect, sort, arrange, and rearrange seeds, acorns, or natural loose parts.

Create nature play areas.

- If you have outdoor access, create a garden and nature play area made of logs, stumps, boulders, river rock, sand, and native plants.
- Include signage informing visitors about the benefits of playing in nature and taking small physical risks. Explain that even very young children benefit from playing in sand, dirt, and grass. Call attention to local wild animal neighbors and give visitors suggestions about where to look for them.

Nature & Well-being | Children, Birth to Age 8

To Think About

Incorporating living things into the museum builds children's connections to nature.

- Native plants, fresh water, and shelters attract wildlife outdoors.
- Easy-to-care-for plants or animals like worms, crickets, crayfish, goldfish, or mice support indoor nature experiences.
- Local rescues, shelters, zoos, or humane societies can offer guidance on animal selection and care.
- Common animals found in pet stores and bait shops do not require complicated care, just staff willing to learn about their needs.

To Do

Share care with visitors.

- Invite families to assist in planting, watering plants, harvesting seeds, and tending gardens.
- When feeding live animals in public, model mindfulness of animal comfort by considering the noise level and proximity of visitors who are watching and asking questions.
- Add live plants and animals to common areas. Can a pair of goldfish greet visitors?



To Think About

There are ample solutions available even if you can't build a new nature exhibit.

- What living things can you add to existing spaces?
- What natural materials can you add to existing spaces?
- A young child's world is what's immediately around them: things they can see, smell, and touch. Creating opportunities for children to connect with wildlife nearby helps them focus on the local, rather than wildlife from faraway places.

To Do

Use realistic animal puppets, stuffed animals, and natural elements.

- Provide realistic animal and plant puppets to help caregivers engage their young children in pretend play. [Folkmanis](#) is a good source for realistic animals toys. [Wild Republic](#) has a line of stuffed animals made from recycled plastic bottles.
- For more source ideas, visit [greenexhibits.org](#).
- Develop an exhibit that illustrates a climate-friendly home, or remodel a play area using [climate-friendly materials](#). Include messaging for adults about green actions they can replicate at home or work.
- Provide small, confidence-boosting physical challenges such as a path of stepping stones, a series of stumps of increasing height, a climbable tree, or a balancing log raised a few inches off the ground.

To Keep in Mind

Be aware that while simulated natural environments made primarily of synthetic materials may promote interesting and worthwhile physical and dramatic play, their ability to connect young children to nature is limited. Without living things and natural materials, young children cannot reap the full benefits of nature play. There's no substitute for the real thing.

Empathy & Resilience | Children, Birth to Age 8

Create exhibits, visuals, signage, and messaging that welcomes everyone in friendly and inclusive ways. Offer pro-climate actions visitors can take, like planting perennials or using their own water bottles. Build exhibits that show your commitment to using less plastic or more natural materials from local vendors. Feature members across your community working to tackle issues together.



To Think About

Modeling respect for plants, animals, and the museum environment helps build empathy.²⁶

- Having live plants and animals in museums can foster connections for children. This is especially important for those who don't have pets or plants in their lives.
- Plants and animals require lots of care. If you commit to live species, you'll need to provide appropriate care, health, and empathy training for staff.
- Like animals, evidence shows that even plants thrive when spoken to kindly. Pointing this out can lead to feelings of connection.²⁷

To Do

Set the expectation that respecting the museum and living things is part of everyone's job. "This is your museum. Help keep it clean."

- Incorporate non-toxic plants and live animals (even ants or fish) into exhibit experiences and create signage that encourages connections.
- Name the museum's plants and animals, use their names in signage, and talk about their preferences. "Spikey wakes up early and likes to swim every morning."
- Create opportunities for visitors to pick up after themselves. Incorporate bins in exhibits so putting things away is easy, and provide spray bottles of non-toxic cleaner, towels, and child-sized brooms in your cafe or program spaces.

26. Wilson, R. (2014, December 23). Caring for Plants and Animals Fosters Empathy | Learning for Justice <https://www.learningforjustice.org/magazine/caring-for-plants-and-animals-fosters-empathy>

27. Choube, D. & Sharma, S. (2021). Psychological and Physiological Effect in Plant Growth and Health by using Positive and Negative Words. International Journal of Innovative Research in Technology, 8(1), pp. 38-41. https://ijirt.org/publishedpaper/IJIRT151445_PAPER.pdf



To Think About

Open-ended exhibit experiences provide ample opportunities for risk-taking and problem-solving.

- Young children develop greater problem-solving skills and confidence when they can experiment without a set of instructions or a clear recipe to follow.²⁸ This doesn't mean no directions, just that it is ideal to create opportunities for open-ended play.

To Do

Include opportunities for risk-taking and messages of resiliency into your exhibits. Reinforce the idea that kids should try new things, and that they will fall, make mistakes, and all of that is good.

- When designing new exhibits, create challenges for children at every age. Design in enough opportunity for children to "grow with the exhibit" as they age.
- Include messages about where to get Band-Aids and ice packs, so it is clear that falling is an expected part of childhood, even at the museum.
- Include real life examples/stories of children who did brave or hard things and succeeded.

28. Keen, R. (2011). The Development of Problem Solving in Young Children: A Critical Cognitive Skill. Annual Review of Psychology, 62(Volume 62, 2011), 1-21. <https://doi.org/10.1146/annurev.psych.031809.130730>

Empathy & Resilience | Children, Birth to Age 8



To Think About

Children's museums are often a cacophony of sounds and visual noise, which can be overstimulating for young children.

- Creating small spaces for refuge provides opportunities for young children and caregivers to regroup and center.
- Becoming familiar with [trauma-informed design](#) can help you incorporate its main principles into the environments you create.

Using language that encourages empathy, resiliency, and agency supports caregivers to model this behavior in their own lives.

- Empathy-based signage reiterates the practices museum staff model in their interactions.

To Do

Create quiet spaces for children to experience a sense of containment or enclosure, and feelings of calm.

- Add small spaces of refuge, like a reading nook for two, a series of small trees to crawl inside, or an enclosure to cook a pretend meal.
- Outdoor spaces, even a patch of grass or small park, offer unique opportunities to get fresh air and a sense of calm.

Create signage in your early childhood space(s) that prompts kindness and models age-appropriate language to encourage resiliency and agency.

- Through signage, encourage caregivers to remember a special place from their childhood. This helps them empathize with their child's experience of wonder.



To Think About

Incorporating children's voices, drawings, photos, and writing demonstrates children's agency.

- Seeing one's contributions valued builds confidence and resiliency.

Sourcing sustainable materials locally and in exhibit fabrication shows your museum's commitment to the planet.

- Connecting your care for children with their voices and your sustainability commitment showcases your museum's values.

To Do

Display children's writing, artwork, ideas, and pictures publicly and in exhibits.

- Ask children to make and leave pieces in ways that can be reused again.
- Showcase children who have done something great for the environment at their home or school.

Source your exhibit materials locally, using green products, local vendors, and recycled materials.

- Tie this commitment to the idea of empathy for the environment. A good resource for how to start can be found at www.greenexhibits.org.

To Keep in Mind

Stay away from notions of a problematic future, as children this age live primarily in the present. Even so, they can still feel overwhelmed. Staying in the present will help them stay calm and feel positive. See these guides from [Our Kids' Climate](#) for more details.

Hope & Collective Action | Children, Birth to Age 8

Model climate-friendly behavior, and invite children and their families to participate in caretaking for the earth and your community. Provide inspiration by showcasing adults and children who have made a difference in their communities.



To Think About

Collaborative exhibits that require multiple people to work together are great for teaching teamwork and building community.

- These kinds of exhibits help visitors practice problem-solving and encourage children to persist when things become challenging.
- Calling out teamwork in your signage reinforces the idea of collective action.
- Consider reading or rereading [The Participatory Museum](#) to gain insights into participatory action.

To Do

Provide open-ended, collaborative experiences so parents and children from different families can work together.

- Over the course of hours, days, or even weeks, let visitors contribute to building a town using cardboard or recycled materials.
- Help children identify parts of a city while encouraging them to imagine what a town in harmony with the environment can look like.
- Invite children and caregivers to share what they value and hope is prioritized in their community. Invite elected officials into the museum to learn what different families value.



To Think About

How can your exhibits facilitate connecting with others?

- Creating opportunities to include children and caregiver voices in your exhibit development process helps you understand their hopes, fears, and aspirations about the future.
- Highlighting the museum's pro-climate behaviors and inviting visitors to participate builds ownership and belonging. For example, you could install a battery recycling collection bin in your museum and share the climate impact.

Featuring community members and their work in your exhibits helps children appreciate the people in their own community.

- Highlighting diverse people and cultural groups builds community.
- This helps children understand their broader community and the variety of people who live in it.

To Do

Design built-in ways for caregivers to connect with each other as they watch their children play.

- Build benches that face each other.
- Create signage about the benefits of connecting with others who have children of similar ages.
- Give caregivers opportunities to connect through programs like playgroups.
- Post questions that will spark conversation about caregivers' hopes and concerns and favorite pro-climate actions.

Include examples of ways parents have worked together to address climate challenges in their neighborhoods and communities.

- Consider dynamic signage or exhibits that allow for rotating stories from the community about their collective climate action.

Hope & Collective Action | Children, Birth to Age 8



To Think About

Climate actions yield real and sometimes intangible economic and health benefits. Exhibits or signage can tell the story of these connections.

- For example, reducing emissions means cleaner air, which means healthier children.

You can position the museum's role as a climate convener for community conversations.

- Local environmentalists and experts can partner on exhibit collaborations and other opportunities.

Modifying existing exhibits with climate prompts can inspire collective action.

- If a full exhibit isn't possible, even adding small floor engagements can inspire visitors to take action. For example, consider transforming supermarket exhibits into farmers' market exhibits made with sustainable materials.

To Do

Create an exhibit component that models the changes your museum is making.

- Provide video of staff, community members, or local companies who model sustainable practices.

Create exhibits encouraging positive environmental behaviors that improve health and well-being. Encourage visitors to think about:

- Reducing meat consumption
- Weatherproofing
- Recycling/reusing
- Walking rather than driving
- Investing in clean energy

Highlight actions visitors can take at home, school, or in the neighborhood.

- Encourage visitors to track their pro-climate actions. For example, they could track how many days they ride a bike instead of drive a car.

Collaborate with local organizations to reduce, recycle, reuse, rethink, and redesign.

- Work with artists and construction teams to identify salvageable materials from building sites for reuse in exhibits or facilities. Old gym flooring, bleachers, barn wood, and more can look great and showcase reuse.

To Keep in Mind

Children's experiences are different – in your community and around the world. Do your best to represent various points of view and lived experiences in your representations of homes, feelings, values, capacities, and opportunities to take care of community members and the earth.

A close-up photograph of a young Black baby with curly hair, sitting on the floor and holding a large wooden block. The baby is wearing a patterned bib and is surrounded by other wooden blocks. In the background, the legs of an adult wearing blue jeans and a pink shirt are visible. A semi-transparent teal box with white text is overlaid on the lower half of the image.

"Teamwork is the secret
that makes common people
achieve uncommon results."

– Ifeanyi Enoch Onuoha, Educator & Author

MARKETING & COMMUNICATIONS

Nature & Well-being (Birth to Age 8)

Empathy & Resilience (Birth to Age 8)

Hope & Collective Action (Birth to Age 8)

Nature & Well-being | Children, Birth to Age 8

Communicate the importance of children's early encounters with natural materials, living things, and time outside. Acknowledge that connecting children to nature and the outdoors is an integral part of a healthy childhood.



To Think About

Consistent messaging about the importance of quality early childhood experiences in nature sets the stage for lifelong care for the environment.²⁹

- Regular messaging could encourage incremental change and community-centered, pro-climate actions. For example, you could remind visitors of accessible bus or bike routes and the emissions savings these choices create.

To Do

Create a social media campaign showing local families exploring nature in easy, accessible ways.

- Share reactions from visitors about their experience with your museum's programs and exhibits that promote pro-climate behaviors.
- Include short videos that show children being active indoors and outdoors, including children challenging themselves on climbing structures, for instance.

29. Kellstedt, D. K., Suess, C. S., & Maddock, J. E. (2024). Influences of Outdoor Experiences During Childhood on Time Spent in Nature as an Adult. *AJPM Focus*, 3(4), 100235. [https://www.ajpmfocus.org/article/S2773-0654\(24\)00053-1/fulltext](https://www.ajpmfocus.org/article/S2773-0654(24)00053-1/fulltext)

Nature & Well-being | Children, Birth to Age 8

To Think About

Your museum can become a central, low pressure, “one-stop-shop” for caregivers learning to live more sustainably.

- You can demonstrate how museum operations reduce environmental impacts in electricity consumption.
- You can connect the changes made at the museum to changes families can make at home to decrease their environmental impact, while offering resources to support families making such changes.

To Do

Extend your messaging.

- Feature local wildlife in your publications, and include messaging about why it’s important for children to get to know their wild animal neighbors.
- Include gift shop items that encourage exploration of local wildlife such as binoculars, sketch books, and field guides.
- Provide messaging in the gift shop about your efforts to reduce packaging. Encourage visitors to purchase items made from sustainable, local, or natural materials.
- Create social media posts highlighting your museum’s sustainability efforts and upgrades.
- Share behind-the-scenes stories of how staff value and enact pro-climate actions.



To Think About

An active child is a healthy child.³⁰

- Does your museum offer ways for kids to get moving both inside and outside?
- It's important to provide challenges for children that involve moderate risk so they can test and understand their limits.

To Do

Educate parents about “risk-benefit” assessments; taking moderate risks offers significant benefits for children.

- Use metaphors that make sense to your audience. For example, “Playing soccer is risky, but the benefits of exercise, teamwork, and coordination outweigh the risks.”
- Develop tools for parents to assess their child’s comfort with risk (like the spice level at a restaurant or the black diamond ski rating system).

To Keep in Mind

Nature-based media should be a supplement to, not a substitute for, interacting with living things, natural materials, and outdoor experiences. When children have ample time to play outdoors and connect with nature, they use their senses, test their limits by taking small risks, and form relationships with their wild animal neighbors. Digital media can be a useful window to view nature but it lacks vital sensory opportunities.

30. Gao, Z., Chen, S., Sun, H., Wen, X., & Xiang, P. (2018). Physical Activity in Children’s Health and Cognition. BioMed Research International, 2018, 8542403. <https://doi.org/10.1155/2018/8542403>

Empathy & Resilience | Children, Birth to Age 8

Communicate that everyone is welcome, cared for, and respected at your museum. Clarify that you care about children, their health, their future, and the environment that sustains them. When visitors see others like themselves in your museum's welcome messages – front-line staff, languages, images, signage, and photographs – you create a greater sense of belonging, which is a precursor for all climate action.



To Think About

Reinforcing the museum's ethic of caring for children and the environment can become a core part of its work.

- Research shows that talking about climate regularly is one of the most effective ways to normalize the topic and bring about change.³¹
- Daily positive climate messaging can be shared with the public through your communications or operations.
- Highlighting staff and board members' climate-focused activities reinforces your museum's climate leadership.

To Do

Publicly acknowledge the museum's values and mission to care for children's and the planet's health.

- Publicly include your commitments, accomplishments, and tips for parents in raising resilient children. Your website, blogs, newsletter, funding appeals, and advertisements are great vehicles.
- Talk about institutional changes like installing a new water bottle filling station, compost bins, solar panels, or a new program or nature exhibit.
- Big and small gestures – talk about them all.

31. Hayhoe, K., Patz, J., & Baker, B. (2022, March 17). Talk, Act, Hope: Pushing Together to Save Us from the Effects of Climate Change. Association of Children's Museums. <https://childrensmuseums.org/2022/03/17/talk-act-hope-pushing-together-to-save-us-from-the-effects-of-climate-change/>



To Think About

A commitment to working collaboratively models collective action, invites participation, and sustains efforts over time.

- Showcasing your sustainability partnerships and successes promotes collective action.
- Acknowledging partners' successes and celebrating how your museum works with your community (through this Caretakers of Wonder partnership and others) keeps people motivated and energized.
- Daily reminders to visitors and staff that we are better when we work together invite participation and collaboration.

To Do

Highlight community members who are engaged with the museum's sustainability efforts.

- Use their names, languages, images, or contributions in your public spaces.
- Include children.

Commit to climate collaborations, partnerships, and serving your whole community.

- Include members from across your community in all climate collaborations. Remove barriers to participation by paying everyone for their time.
- Welcome people of all backgrounds, ages, and abilities when establishing climate collaborations.
- Attend your partners' climate events.
- Talk about the power of collective climate action in your signage and public messaging.

Empathy & Resilience | Children, Birth to Age 8



To Think About

Evidence shows that framing actions based on protecting health invites more people in.

- Framing the museum's commitment to climate action as a way to protect children's health helps build support across the political spectrum. Acting on behalf of children's health leads to acting in the best interests of the environment.³²
- Highlighting actions your organization is taking, using the language of leadership, collaboration, and problem-solving, positions your museum as a community leader.
- Tying institutional actions to your community's public health goals models care for the children you serve.

To Do

Communicate and frame your museum's climate actions around children's health and well-being.

- Cite research on how lowering carbon emissions helps protect children's health. See <http://www.climatesolutionsforhealth.org> for more information.
- Talk about how your nature, health, and mindfulness exhibits/programs help build resilient children. See the [Healthy Minds Kindness Curriculum](#) for more information.
- Include messaging for caregivers about the importance of risk-taking, collaboration, and problem-solving in supporting children's self-confidence, mental health, and well-being.

To Keep in Mind

Avoid doom and gloom images and messages (for example, no images of starving polar bears floating on icebergs, or negative messages about how much we have to lose). These kinds of messages can stoke fear and anxiety rather than hope and action and can be detrimental to young learners.

32. Patz, J. (n.d.). Making health central to climate action & policy. Climate Solutions for Health Lab. Retrieved November 25, 2024, from <https://www.climatesolutionsforhealth.org/research>

Hope & Collective Action | Children, Birth to Age 8

Because individual actions are no longer enough to combat climate change, our role as museums can be to inspire and educate about collective action. We can help caregivers, children, stakeholders, and staff understand how they are part of a community of people and living beings. It is better if we all act on behalf of the larger community.



To Think About

Newsletters, social media, and special campaigns are great avenues to promote and encourage collective action in your museum and community.

- Promoting family environment festivals, Earth Day celebrations, or collective activities that support the community encourages collective action.
- Sharing positive climate efforts of other museums or organizations can inspire our own community.

Your museum's climate work can be enhanced by coordinating with your local and state government's climate efforts.

- The [US Early Years Climate Plan](#) works toward climate policy changes that support children's health and futures.
- Meeting regularly with elected representatives to advocate for children's health and a safe environment positions your museum as a community leader.

To Do

Through your public communications, highlight the museum's energy and waste reductions, and encourage others to join your efforts through actions and advocacy.

- Highlight inspiring stories about the ways children, families, and staff are already making a difference in your community.
- Share information that helps families understand areas where they might be able to have a positive impact via their food choices, waste disposal, energy use, or plant choices.
- Promote advocacy groups that parents can engage in like [Science Moms](#) or groups working on behalf of children near you.
- Promote letter-writing campaigns and get to know local and statewide politicians.

Hope & Collective Action | Children, Birth to Age 8



To Think About

Creating and publicizing your institution-wide sustainability commitment and community engagement process will strengthen your community's perception of your leadership.

- Engaging internal and external stakeholders in writing or reviewing your sustainability statement builds trust.
- Sharing your successes and challenges publicly models transparency, accountability, and leadership.

To Do

Develop and share a museum-wide sustainability statement or white paper.

- Document your museum's sustainability practices. Engage staff members from all departments so practices become institutionalized.
- Showcase the museum's sustainability practices, highlighting energy systems, solar panels, recycling efforts, composting, waste management, and beyond.
- Create an annual progress report to share publicly.



To Think About

Publicizing collaborations with environmental partners and experts positions your museum as a convener.

- Coordinating environmental messaging with partners optimizes your communication channels and builds new audiences.

To Do

Spark conversations.

- Talk about institutional investments, financial or otherwise, that reflect your commitment to sustainability.
- Start a blog or book club about hope-focused climate action. Consider reading [What if We Get It Right?](#)
- Create an event for caregivers to learn about local issues. Brainstorm actions that they might take collectively on behalf of children.

Hope & Collective Action | Children, Birth to Age 8



To Think About

Internal conversations and communications about climate change and your museum's role in solutions builds a culture of hope and action.

Highlighting different staff engagement strategies in your internal communications helps build support. For example, Katharine Wilkinson (from her book *All We Can Save*) offers five steps to engage organizational staff in climate actions.

- Providing space and time for employees to share how they're feeling about climate change
- Supporting staff in finding ways they can help others
- Sharing resources (like this one!) to help employees learn more about climate actions locally and globally that might inspire them
- Inviting employees to think about the areas of their lives where they have influence and can promote change: personally, professionally, and in their community; identify ways that they may want to take action
- Setting up a cross-departmental green team for your organization who will help to recommend best practices and new policies

To Do

Integrate climate communications into your regular internal and external communication channels.

- Make climate news a regular feature in your internal and external communications. Consider spotlighting climate heroes on your staff and in the community.
- Highlight the work each department is contributing to climate action on a rotating basis.
- Spotlight staff who are leading climate action efforts at your museum and in their community.
- Promote guest speakers and solicit suggestions for others in your employee newsletters/communications.
- If you haven't done so already, create an internal [green team bulletin](#) in collaboration with your green team.

To Keep in Mind

Don't overwhelm caregivers or make them feel guilty by providing complicated ideas that seem unattainable. Encourage adults to share responsibility with their children and to take small steps. Every action matters!

"The visions we offer children shape the future. It matters what those visions are."

– Carl Sagan



FACILITIES & OPERATIONS

Nature & Well-being (Birth to Age 8)

Empathy & Resilience (Birth to Age 8)

Hope & Collective Action (Birth to Age 8)

Take climate change seriously and reflect this in your daily operational practices. Highlighting concrete, sustainable changes can have a big impact. Prioritize using salvaged and repurposed materials and consider the entire lifespan of fabrication materials, including how materials can be disposed of when the museum's needs change.



To Think About

Families with children of all ages need opportunities to be outside engaged in diverse play.³³

- No matter your location, consider how you can build spaces, partnerships, capacity, and staff training into your schedule to provide visitors with more outdoor access.
- What structures – such as sun and rain protection – can you add to encourage families to spend time outside in all kinds of weather?

To Do

Create safe spaces outdoors.

- Avoid using pesticides and rodent traps.
- Create outdoor areas for visitor picnics and/or education programs such as tables with umbrellas, a circle of tree stumps or boulders, and/or a small, paved area.
- Create feeding stations for birds, particularly in areas visible from museum windows.
- Add bird-strike decals to your windows to protect your bird neighbors.
- Ensure outdoor pathways are accessible for children, strollers, and people using mobility devices or wheelchairs.

33. Prins, J., van der Wilt, F., van der Veen, C., & Hovinga, D. (2022). Nature play in early childhood education: A systematic review and meta ethnography of qualitative research. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.995164>

Nature & Well-being | Children, Birth to Age 8

To Think About

Is your museum transparent about the measures you're taking to combat climate change and create more sustainable infrastructure?

- Making climate actions an agenda item at your leadership and department meetings is a great place to start, and starting a sustainability "wish list" will help too.
- How can you communicate about new pro-climate protocols with staff outside your department?
- What conferences and trainings can you attend and how can you share what you learn with your colleagues?

To Do

Provide incentives to staff (and visitors) for biking or using public transportation to get to the museum.

- If it is safe to bike in your city, offer Bicycle Benefits programs, and install bike parking that can accommodate bike buggies, trailers, and cargo bikes.

Take more sustainable, pro-climate actions.

- Use more sustainable electricity sources like wind or solar (varies by region).
- Add a water bottle refilling station near your drinking fountain(s). Some even come with a built-in meter that shows how many disposable water bottles have been saved.
- Add more locally sourced food items in your museum cafe.
- Conduct a building energy audit. Set targets to decrease energy use.



To Think About

By including the surrounding neighborhood in your climate action plans, you extend the effects of your work beyond the museum's walls.

- Are there spare capacities (meeting rooms, bike racks, or picnic areas) at your museum that a local organization could access and benefit from after-hours at no or low cost?
- Likewise, are there nearby outdoor spaces that your programs could utilize? An outdoor stage, a lawn, a small stream?
- Staff who live near the museum may have ideas or suggestions about developing partnerships with local community groups.
- Consider what kinds of community recycling or composting opportunities you can realistically provide. Could you create a program to recycle household batteries or plastic bags?

To Do

Work with your neighbors to care for your shared environment.

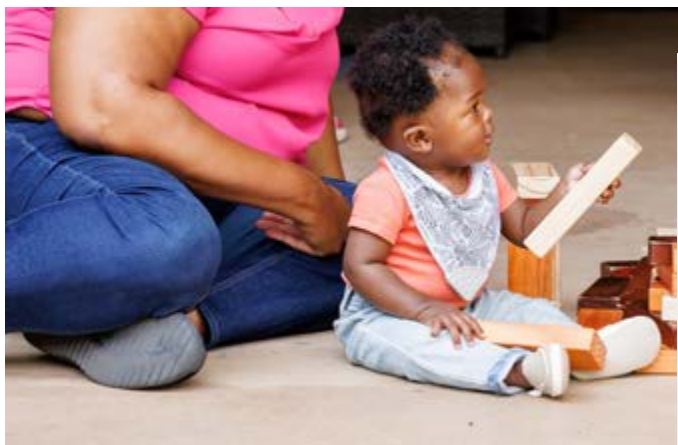
- Organize neighborhood clean-ups.
- Create partnerships with neighbors and encourage shared caretaking of the land you and your neighbors enjoy.
- Display a large map of the museum neighborhood illustrating nearby places to eat, play, and explore.

To Keep in Mind

You don't have to do it all at once. Find something you're passionate about and start there. Start a composting program or herb window garden in the staff kitchen, or install bird feeders outside of your building.

Empathy & Resilience | Children, Birth to Age 8

Strive to meet each visitor's needs with a well-trained staff and nimble accommodations.



To Think About

Visitors come to museums with different backgrounds, experiences, and expectations, and all expect to be treated graciously.

- Showing that the museum cares about its staff and visitors' well-being helps build trust, empathy, resilience, and belonging.
- Creating an audience-centered, personalized museum experience helps newcomers understand the unwritten rules of museum-going and makes visitors of all backgrounds feel welcome.³⁴
- Welcoming signage in multiple languages creates a sense of belonging.
- Creating an institutional culture of care that treats staff with compassion, kindness, and openness models the kind of care you expect for visitors.

To Do

Train your front-line staff in both trauma-informed care and hospitality.

- Look for training from a trauma professional in your community to deepen your understanding.
- Take a behind-the-scenes field trip to an organization in your community known for its hospitality. Learn best practices from exemplary businesses in historically neglected communities.
- Meet regularly to discuss challenges facing museum visitors that get in the way of empathy-building.

Create a museum culture of care.

- Have staff read and discuss chapter two, "Participation Begins with Me," in Nina Simon's book *The Participatory Museum*.
- Acknowledge staff contributions in creating a caring culture during meetings, through intradepartmental emails, or via other activities.
- Create lunch-and-learn programs to share talents.
- Develop rituals to celebrate successes.
- Offer mindfulness or movement classes for staff.
- Offer a museum-wide 30-second stretch or deep-breathing pause one or two times a day for staff and visitors.
- Provide resources that help visitors find services they need (like food pantries, free dental care, mental health support, childcare co-ops, etc.).

34. Simon, N. (n.d.). Chapter 2: Participation Begins with Me - The Participatory Museum. Retrieved November 25, 2024, from <https://participatorymuseum.org/chapter2/>



To Think About

Showcasing the museum's gratitude for its staff, board, volunteers, and community creates a sense of belonging.

- Research shows that practicing appreciation and gratitude, even for a short time, builds feelings of belonging and compassion, both of which support our well-being.³⁵

To Do

Incorporate gratitude rituals into museum culture.

- Start all staff, board, and community meetings with gratitude practices and opportunities for reflection. Express gratitude for the gifts and talents of your diverse community and highlight contributions that are underrecognized.
- Acknowledge who came before you and the sacrifices they made on your behalf, with a Land or Knowledge Acknowledgement.
- Add a gratitude wall or white board in your staff kitchen or lounge, and encourage staff to recognize small acts of kindness.
- Find more ways to incorporate gratitude into your work culture in "[How Gratitude Can Transform Your Workplace](#)," by Kira M. Newman, from Greater Good Magazine.

35. Weng, H. Y., Fox, A. S., Shackman, A. J., Stodola, D. E., Caldwell, J. Z. K., Olson, M. C., Rogers, G. M., & Davidson, R. J. (2013). Compassion Training Alters Altruism and Neural Responses to Suffering. *Psychological Science*, 24(7), 1171-1180. <https://doi.org/10.1177/0956797612469537>

Empathy & Resilience | Children, Birth to Age 8

To Think About**How can you show staff and guests that their voice matters?**

- Collecting visitor and staff suggestions can improve feelings of belonging and help the museum better meet stakeholder needs.
- Simply asking visitors what makes them feel welcome increases feelings of belonging.

To Do**Encourage visitor and staff feedback.**

- Develop easy ways for visitors and staff to give feedback about their experiences and offer suggestions for improvement. Ensure that there are no negative repercussions for sharing constructive feedback.
- Listen and respond to suggestions. Communicate publicly when a visitor suggestion leads to positive changes.
- [The Participatory Museum](#) is an excellent book-length resource, while this short blog post by Seema Rao, "[Put Down the Clipboard: Visitor Feedback as Participatory Activity](#)," on the Museum 2.0 blog, describes creative methods of gathering visitor feedback.



To Think About

Supporting risk-taking and problem-solving can mean falls!

- Children are bound to fall, have accidents, stub their toes, and feel unhappy when they get hurt.
- Handling injuries with grace models self-care, resiliency, and the idea that trying again and again is healthy.
- Accessible pathways provide visitors with a range of abilities to take healthy risks.

To Do

Empower museum staff to hand out adhesive bandages.

- Post your museum's commitment to healthy risk-taking with a gentle reminder to parents that adhesive bandages are freely available.

Empathy & Resilience | Children, Birth to Age 8



To Think About

Can your museum meet a wide variety of visitors' needs?

- Often, visitors with young children are seeking a sense of community and belonging.
- Think of everything that impacts visitors with young children from the time they enter the bike/parking area to the time they leave.
- Making things as easy as possible helps visitors feel that the museum cares about them and their experiences.

To Do

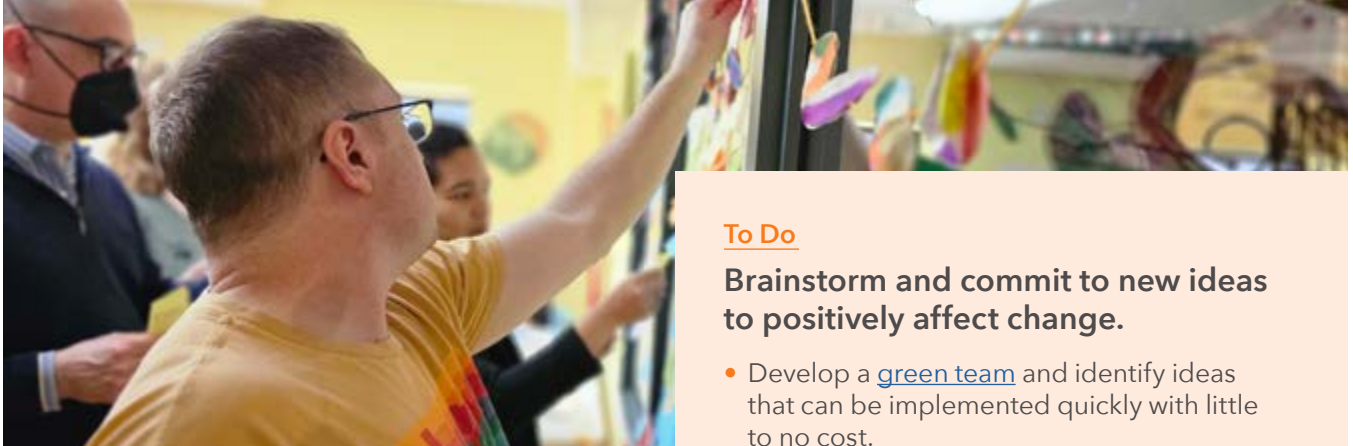
Communicate about your visitor amenities loudly. Highlight that you provide:

- Comfortable seating
- Stroller and coat storage
- Private or semi-private nursing areas
- Well-lit and generously stocked changing areas
- Free emergency diapers, wipes, and changes of clothing
- Spaces to take breaks, rest, and enjoy peace and quiet
- Snacks
- Outdoor spaces

To Keep in Mind

Don't assume changes you've made to your facility are visible to visitors and staff. Call them out and talk about how new practices/procedures/infrastructure benefit human and planetary health. Talk about carbon emissions reductions, for example, in terms that matter most to the people you serve (financial savings, health impacts, environmental impacts/savings, or all three).

Cultivate staff buy-in for pro-climate action. Consider how the vendors and materials you use impact the environment. Organize employee carpools for commuting and off-site activities to lower carbon emissions.



To Think About

Your museum's staff can become a powerful pro-climate collective.

- Cultivating buy-in from all staff reinforces the idea that working together yields significant, positive impacts on the health of the museum as well as the world.
- Acknowledging that climate work can be challenging creates space for staff to talk about what they are feeling.
- Giving people a chance to express their climate grief can be helpful in combatting isolation and sadness. Being part of a solution helps people feel more hopeful.

To Do

Brainstorm and commit to new ideas to positively affect change.

- Develop a [green team](#) and identify ideas that can be implemented quickly with little to no cost.
- Assess [energy use](#), water use, new purchases, and paper use.
- Conduct a waste audit, introduce composting, and encourage visitors to pay close attention to trash.
- Reconsider using paper goods and disposable utensils at events. Invest in reusable cutlery and dishes for smaller events or for staff use.
- Start a gratitude practice for staff and share positive news stories.
- Start a reading group of Katharine Hayhoe's book *Saving Us* at your organization.

Create opportunities for staff to work together on a community issue.

- Clean up a creek.
- Plant trees in a heat island.
- Take part in a research project.
- Meet with congressional representatives.
- Then, create communications about your staff's collective actions to share with visitors.
- Visit [Greenexhibits.org](#) website and [CaretakersOfWonder.org](#) for additional facilities-related ideas.

Hope & Collective Action | Children, Birth to Age 8



To Think About

Reduce, Reuse, Recycle, Rethink, Redesign.

- Updating the three R's to include "rethink" and "redesign" helps people imagine a different future.
- Engage in staff dialogue toward change; consider waste management, POS system, vendors, equipment use, cleaners, birthday party supplies, trash collection, and other ways you can reduce, reuse, recycle, rethink, and redesign.

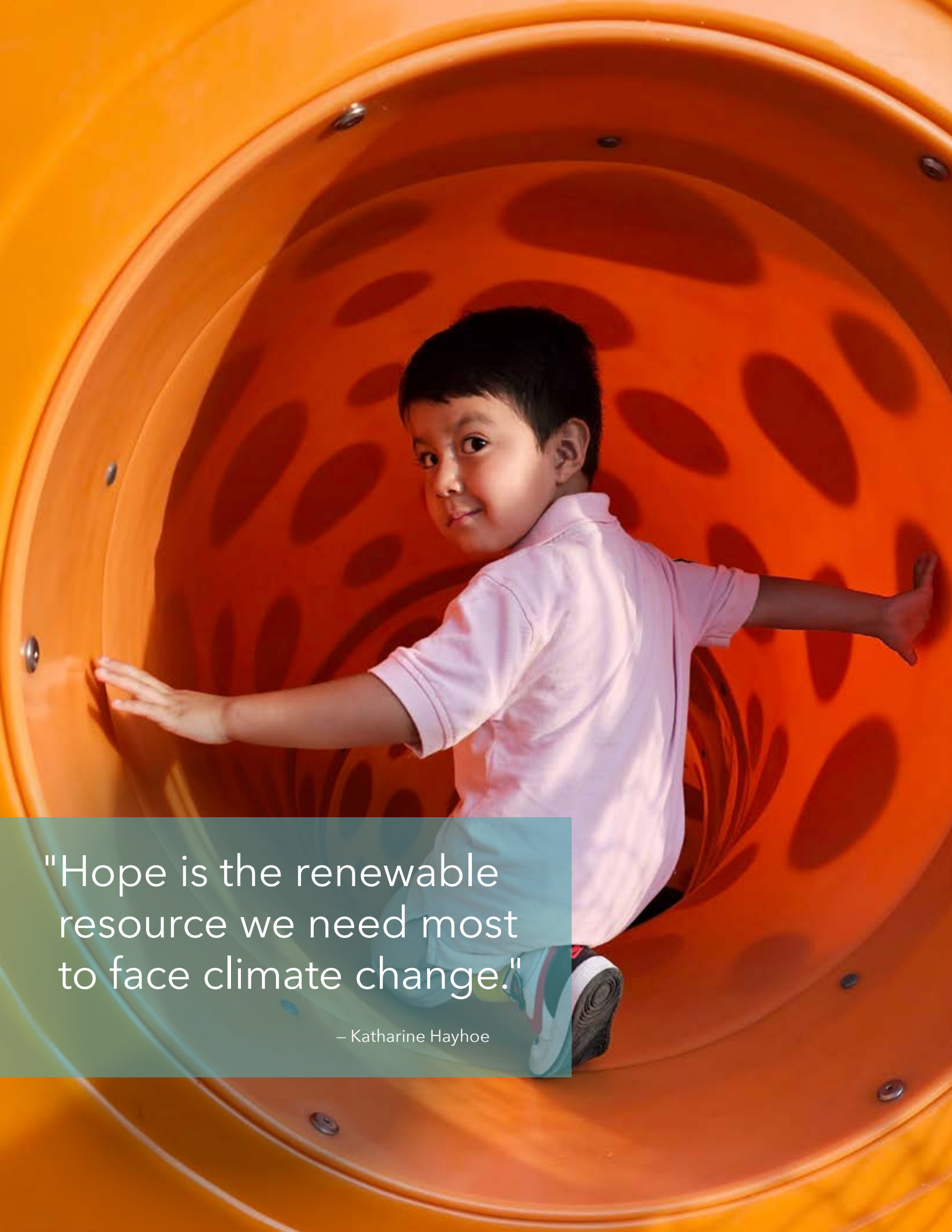
To Do

Develop a comprehensive sustainability plan for your museum.

- Complete a department-by-department sustainability audit, assessing what you're already doing well and identifying areas for improvement.
- See the [Phipps Conservatory's Climate Toolkit](#) for more information on sustainable building and energy practices, food service, landscapes, horticulture, and waste and water resources.
- Think carefully about the ways staff might reuse programmatic, exhibit, administrative, and facilities-related materials. Reach out to other groups to collaborate on purchasing, sharing equipment, usage, reclaimed materials, etc.
- Establish new norms and policies focused on sustainable choices. For example, consider plant-based food options in your institution. See [Greener by Default](#) as one model for this transition.

To Keep in Mind

Don't think you have to do this alone. There are likely other staff members interested in and committed to sustainability. Working together as an organization and identifying environmental champions will benefit everyone.



"Hope is the renewable resource we need most to face climate change."

– Katharine Hayhoe

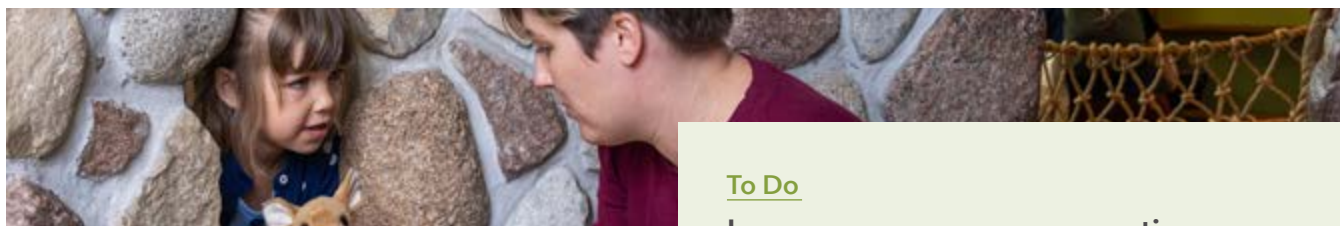
VISITOR SERVICES

Nature & Well-being (Birth to Age 8)

Empathy & Resilience (Birth to Age 8)

Hope & Collective Action (Birth to Age 8)

When young children have a foundation of positive nature experiences that supports their mental and physical health, they are more likely to become engaged environmental stewards as they grow older.



To Think About

Playing in and exploring nature helps children develop physical and observational skills, and learn to be at home in the natural world.

- Encouraging open-ended play in the outdoors is best. If being outdoors isn't possible, play with natural materials.
- Children love to create their own special places where they feel safe and can make the space their own – forts are important!

What do children notice? How are things related? These questions help promote curiosity.

- When you listen to children's thoughts and questions, you can wonder with them.
- By asking questions about their observations, you foster curiosity.

Interactions with animals can promote children's well-being and agency.

- Showcasing your teaching animal's individuality, needs, and preferences demonstrates the museum's respect.
- Children feel empowered by learning to gently pet and feed animals.

To Do

In your museum space, practice playing with children and nature.

- Introduce children to natural materials through play to expand their curiosity.
- Initiate bringing play outside when possible.
- Have children assist in daily plant watering.

Build on children's curiosity, meet them where they are, and offer questions to support their wondering about how things fit together.

- Ask questions such as: "What do you see happening?" and "How does that happen?"
- Role-play a curiosity exercise with your colleagues to explore what questions feel appropriate and effective.

Practice guiding interactions between guests and animals.

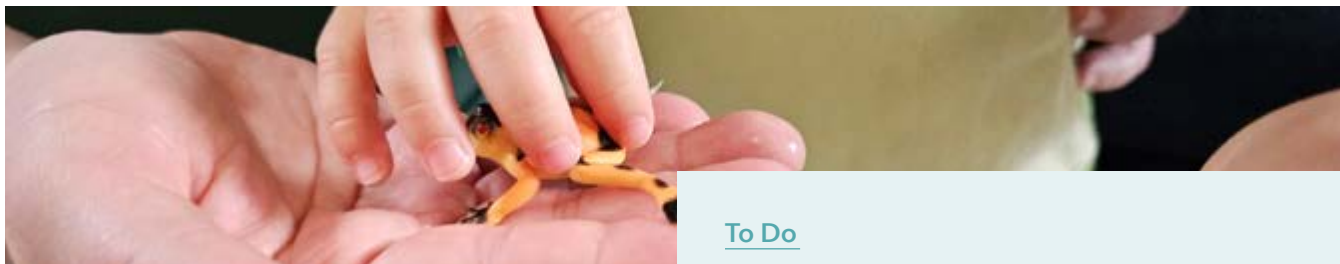
- Use the animals' names and talk about their preferences.
- Use empathic language that encourages being gentle and respectful of the animals.
- Let visitors participate in guided animal care and feeding, if appropriate.

To Keep in Mind

By supporting families as they experience nature in your space, you are giving them the opportunity to make significant connections with animals, plants, and the natural world, forging bonds that can last a lifetime. Children are naturally drawn to nature – support their joy and discovery.

Empathy & Resilience | Children, Birth to Age 8

When young children develop tools to value and express their feelings, show gratitude, and practice respecting others, they strengthen their capacities for Empathy & Resilience. Both skills enhance well-being during challenging times.



To Think About

Low-stakes risk-taking builds resilience, confidence, and agency.

- Children will lead when you let them.
- Encouraging problem-solving and decision-making promotes children's agency

Noticing children's emotions and behavior and reflecting their feelings back to them makes them feel seen and valued.

- Young children are learning about feelings and how to express them, and they look to adults for reinforcement.

When you listen to their thoughts and questions, you can wonder with them.

- You can demonstrate kindness while you play or lead.
- You can reinforce acts of kindness and resilience when they happen, through praise and acknowledgement.

To Do

Encourage risk-taking through play.

- Practice supportive language that encourages safe exploration.
- With a colleague, role-play what to say when children take risks while playing in your space.

Model emotional and curiosity-driven language.

- Use words that label emotions and describe feelings. "You sound frustrated. Do you feel upset?"
- Practice asking open-ended questions.
- Ask reflective questions like, "How do you think the puppy feels?"

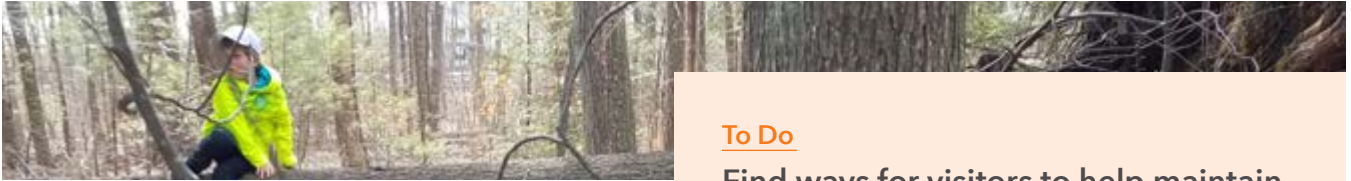
Model and praise empathetic and resilient behavior.

- Practice gratitude, kindness, and self-care.
- Strive to model kindness through your actions with others.
- Create opportunities for kindness and care. Set up spaces where children can practice caregiving, such as feeding or bathing baby dolls or stuffed animals.

To Keep in Mind

You play a crucial role in fostering empathy and resilience. The best way to support children is to practice these skills yourself. By being a kind and supportive role model – toward others and yourself – you help children learn by example.

When young children are supported by their family and community, they are more likely to maintain a sense of hope and optimism as they grow older. When they take action they understand what it means to value, be part of, and contribute to a community.



To Think About

Children taking care of their immediate world is a precursor to taking care of the wider community.

- Children's understanding of the world expands slowly. By focusing on caring for the museum space, you set children up to care for their home and community in the future.
- Caretaking builds a sense of belonging.

School-age children need adults other than their parents who model care for the community and their environment.

- You can use your position to model care for yourself, the museum space, and others.
- By modeling caretaking practices, you set a powerful example for the children and families who visit.

Collective activities help build bridges within your community.

- Museum spaces bring together people from various backgrounds who may not otherwise cross paths or interact in the wider community.
- Sometimes visitors need help to make connections between people in the groups that they came with. Consider places in your museum that can encourage connection through collaborative play.

To Do

Find ways for visitors to help maintain the museum.

- Empower staff to role-model taking care of the space for visitors. Can children assist? For example, could visitors help reset spaces when they are done playing?
- Verbalize connections between caring for the museum and caring for your home, other communal spaces, and the natural world.

Discuss what brings you joy, strength, and motivation in your work to help determine what you're most comfortable role-modeling.

- Practice praising skills with the staff team. Celebrate your diverse strengths and interests.
- Identify an overarching goal that can leverage each member's strengths and support their interests through collaboration.

Encourage working together, for both children and caretakers.

- Brainstorm ways to prompt children to work together in your spaces.
- Discuss opportunities that welcome collaboration between caretakers of different children.

To Keep in Mind

Just by being in spaces with children and supporting them, you are an active part of their community, supporting their growth and well-being. By encouraging collaborative play, you help children build key social skills and help them learn how to effect change.



THANK YOU

Caretakers of Wonder Project Leadership



Brenda Baker
Project Director

Amanda Strobel
Project Manager

Andy Stoiber
Climate Action Playbook Manager

Authors

Brenda Baker
Madison Children's Museum

Jenni Martin
San Jose Discovery Museum

David Sobel
Antioch University New England

Katie Slivovsky
Museum & Zoo
Education Consultant

Amanda Strobel
Madison Children's Museum

Andy Stoiber
University of Wisconsin-Madison

Advisors

Arthur Affleck
Association of Children's Museums

Dr. Richard Davidson
University of Wisconsin-Madison

Neil Gordon
Independent Museum Consultant

Jessica Kleczka
Independent Climate Psychologist

Dr. Gloria Ladson-Billings
University of Wisconsin-Madison

Jenni Martin
San Jose Discovery Museum

Dr. Jonathan Patz
University of Wisconsin-Madison

David Sobel
Antioch University New England

Katie Slivovsky
Museum & Zoo
Education Consultant

Sarah Sutton
Environment & Culture Partners

Stephanie Shapiro
Environment & Culture Partners

Keni Sturgeon
Association of Children's Museums

Dr. Peter Wardrip
University of Wisconsin-Madison

Blake Wigdahl
Process Curiosity

Partner Organizations

**Association of
Children's Museums**
Arthur Affleck, President & CEO

Chicago Children's Museum
Jennifer Farrington,
President & CEO

**The Children's Museum of
Southern Oregon**
Sunny Spicer, Executive Director

Discovery Museum, Mass.
Marie Beam, CEO

**KidsQuest Children's
Museum, Wash.**
Putter Bert, President & CEO

Louisiana Children's Museum
Tifferney White, CEO

National Children's Museum, D.C.
Kyrn Hoffman, President & CEO

Madison Children's Museum, Wis.
Tom Linfield, President & CEO

**Museum of Discovery
and Science, Fla.**
Joe Cox, President & CEO

The Wild Center, N.Y.
Stephanie Ratcliffe,
Executive Director

Partner Organizations



Sponsors



Graphic Designers

Nadia Niggli
Madison Children's Museum

Josie Drake
Freelance Designer

Jaime Omar Espinoza
Freelance Designer

External Reviewers

Melissa Higgins
Boston Children's Museum

Lauren Luneckas
Children's Museum of the
Upstate, S.C.

Gretchen Kerr
Denver Children's Museum

Laura Schmidl
Discovery Cube, Calif.

Dina Buchbinder
Educación para Compartir/
Education for Sharing, N.Y.

Tamar Jacobsohn
Independent Mindfulness
Consultant, Wis.

Dené Mosier

Kansas Children's Discovery
Center, Kan.

Savannah McMullen

Boston Children's Museum

Lara Litchfield-Kimber

Montshire Museum of Science, Vt.

Dr. Rhiannon Crain

Santa Cruz Children's Museum of
Discovery, Calif.

Sheila Williams Ridge

University of Minnesota
Lab School & Independent
Consultant, Minn.

Internal Reviewers**Chicago Children's Museum**

Natalie Bortoli

Elena Lindstrom

Jennifer Farrington

Peter Williams

**The Children's Museum of
Southern Oregon**

Michelle Don

Discovery Museum, Mass.

Kiersten Dittrich

Paul Fenton

Kellie Roche

Ann Sgarzi

**Environment & Culture
Partners, Wash.**

Danielle Sakowski

Louisiana Children's Museum

Stephanie Aubert

Holly Dalferes

National Children's Museum, D.C.

Jessica Harvey

Langley Lease

Madison Children's Museum, Wis.

Charlotte Cummins

Heather Davis

Cheryl DeWalt

Nadia Niggli

Anne Ruffley

James Schrader

**Museum of Discovery and
Science, Fla.**

Joe Cox

Andi Fuentes

Special Thanks To**Dr. Bruce Barrett**

University of Wisconsin-Madison

Julia Bland

Independent Museum Consultant

Crystal Bowyer

National Children's Museum

Deb Gilpin

Madison Children's Museum

Caroline Hickman

Climate Psychologist

Dr. K.C. Busch

North Carolina State University

Joe Waters

Capita

Dr. Noah Weeth Feinstein

University of Wisconsin-Madison

Copy Editors

Jonathan Zarov

Molly Backes

Sara Gabler

Photo Editor

Kate Rowell

Photo Attribution

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100 N. Hamilton St.,
Madison, WI 53703 USA

MadisonChildrensMuseum.org
CaretakersOfWonder.org

May 2025 (V 1.0)

RECOMMENDED BOOKS FOR CHILDREN

Nature & Well-being

"Who Am I?"

by Julie Buchholtz

A touching picture book from an Indigenous perspective that explores connections to ancestors, Earth, and each other, showing how we can help and add beauty to the world

"The Tiny Seed"

by Eric Carle

A tale about the resilience of nature told through a seed's journey as it grows into a beautiful flower

"Can You Hug a Forest?"

by Frances Gilbert

A picture book that celebrates nature's beauty and encourages mindfulness, gratitude, and love for the environment

"Move!"

by Steve Jenkins and Robin Page

A lovely story that follows animals as they swing, float, dance, leap, and slide

"From A to Z: Empowering Children to Create a Kinder World"

by Caroline Kelley and Vivian Balthazar

A book that teaches empathy, compassion, and awareness through the alphabet

"Listen to the Language of Trees: A story of how trees communicate"

by Tera Kelley

A story exploring the network of creatures who live and support one another underground

"Finding Wild"

by Megan Wagner Lloyd

A poetic picture book that celebrates discovering the wild in urban neighborhoods

"Over and Under the Pond"

by Kate Messner

A contemplative look at the ecosystems above and below the surface of a pond, encouraging curiosity and mindfulness

"Thank You, Earth:

A Love Letter to our Planet"

by April Pulley Sayre

A story that inspires hope, mindfulness, and gratitude

"Ruby's Birds"

by Mya Thompson

A captivating tale about a young girl who discovers the wild side of her urban neighborhood and becomes a keen birdwatcher

"A Tree Is Nice"

by Janice May Udry

A warm, classic tale and celebration of trees, their beauty, and their importance in everyday life

"Outside In"

by Deborah Underwood

A poetic reminder of how nature surrounds, influences, and delights us, even when we're indoors

"A Stone Sat Still"

by Brendan Wenzel

An exploration of a stone's place in the ecosystem and its importance to creatures in the environment

"Noticing"

by Kobi Yamada

A book about paying attention and noticing big things, little things, imaginary things, and even hidden things

"Owl Moon"

by Jane Yolen

A hope-filled story of a little girl and her father who go owling in the silence of winter and find peace in the quiet of nature

Empathy & Resilience

"The Winter Bird"

by Kate Banks

A heartwarming story of forest animals helping one another and being thankful

"Miss Rumphius"

by Barbara Cooney

The story of a woman who spreads beauty by planting lupines, demonstrating resilience in pursuing one's dreams and empathy for the world

"Winter's Gifts"

by Kaitlin B. Curtice

A joyful celebration of nature, family, and gratitude

"What Does It Mean to Be Present?"

by Rana DiOrio

A book that teaches the first steps toward mindfulness for children

"Beneath"

by Cori Doerrfeld

A story about a young boy who learns about emotions while walking through the woods with his grandfather

"The Rabbit Listened"

by Cori Doerrfeld

A story about managing turbulent emotions and the importance of thoughtful listening

"The Promise"

by Nicola Davies

A story about how a girl's life changes when she plants seeds in a barren city and sees how nature can bring healing and transformation

"Last Stop on Market Street"

by Matt de la Peña

A beautiful exploration of gratitude, diversity, and seeing the beauty in the world around you, even during difficult times

"This Joy!"

by Shelley Johannes

A lively picture book celebrating the joy found in life's simple moments and the importance of embracing each day as a gift

"Come With Me"

by Holly M. McGhee

A book that encourages readers to engage in small acts of bravery and kindness to make the world a better place, even during uncertain times

"Listen"

by Holly M. McGhee

A delightful story that gently encourages young readers to listen to their heart, pay attention, and show love and empathy

"The Fog"

by Kyo Maclear

A gorgeous picture book about noticing, paying attention, and connecting with others

"Visiting Feelings"

by Lauren Rubenstein

A book that encourages children to explore and accept their feelings

"I Am Human: A Book of Empathy"

by Susan Verde

A book that celebrates the joys and challenges of being human while teaching children how to show kindness and forgiveness

"Alphabreaths Too: More ABCs of Mindful Breathing"

by Christopher Willard and Daniel Rechtschaffen

A book that offers playful ways for children and their caretakers to practice mindful breathing techniques together

"Breathe Like a Bear"

by Kira Willey

A beautiful collection of mindfulness exercises to help kids feel calm, focused, and energized wherever they are

"The Boy with Big, Big Feelings"

by Britney Winn Lee

A book about different emotions

"What Do You Do with a Problem?"

by Kobi Yamada

A story about facing challenges head-on and welcoming new opportunities.

Hope & Collective Action**"Brave Like the Buffalo"**

by Melissa Allan

An inspiring book about braving the storms of life with strong support systems and a courageous mindset

"My Voice Is a Trumpet"

by Jimmie Allen

A lyrical celebration that everyone's voice matters and that children are never too young to express what they believe in

"The Curious Garden"

by Peter Brown

A heartwarming story about a boy who transforms a dreary city into a lush, green oasis by nurturing a neglected garden and inspiring others to care for the land

"The Boy Who Harnessed the Wind"

by William Kamkwamba and Bryan Mealer

An inspiring story about how a boy from a small village in Malawi built a windmill for his community

"The Invisible Web"

by Patrice Karst

An uplifting book that celebrates the infinite bonds of humanity and our connections

"We Are Water Protectors"

by Carole Lindstrom

A beautifully illustrated call to action inspired by Indigenous wisdom that teaches readers to protect our Earth and its precious water resources

"Zonia's Rain Forest"

by Juana Martinez-Neal

A lovely book about preserving the rainforests, seen through the eyes of a young girl

"Me... Jane"

by Patrick McDonnell

A true story of young Jane Goodall and her love of nature, which inspires her to pursue a life of conservation.

"Sweetgrass"

by Theresa Meuse

A delightful book about caring for the gifts of Mother Earth

"The Circles All Around Us"

by Brad Montague

A beautiful story that explores ways to create bigger and bigger circles of community and connection

"Mama Miti: Wangari Maathai and the Trees of Kenya"

by Donna Jo Napoli

A book about transforming a community by planting trees and bringing hope

"One Plastic Bag: Isatou Ceesay and the Recycling Women of the Gambia"

by Miranda Paul

An inspiring true story about how one village in Gambia reduced waste and about how small actions can lead to big changes

"The Thing Lou Couldn't Do"

by Ashley Spires

A book about resilience and perseverance that chronicles young Lou's journey as she faces her fears, tries and fails, and becomes empowered by her efforts

"The Day You Begin"

by Jacqueline Woodson

A book that lays out an important path for collective action and emphasizes hope, courage, and joining forces with others to make a difference

RESOURCES FOR ADULTS

These resources are intended for adult education and are not necessarily appropriate for sharing with children under age eight.

Nature & Well-being

Books appropriate for children and teens about the earth and environment: [Cooperative Children's Book Center](#)

- ccbc.education.wisc.edu

A book-length resource on nature education, from Climate Action Playbook author David Sobel: [Beyond Ecophobia: Reclaiming the Heart in Nature Education](#)

- davidsobelauthor.com

A quick guide to nature play from Climate Action Playbook author Katie Slivovsky: [Nature Play Do's and Don'ts](#)

- caretakersofwonder.org

Age-appropriate nature activities: [Pathways to Stewardship](#)

- pathwayproject.ca

Guide for adults talking about climate with kids: [Our Kids' Climate](#)

- ourkidsclimate.org

Empathy & Resilience

How to teach simple baby sign language like "I love you," "eat," "hungry," etc.:

[Baby Sign Language](#)

- babysignlanguage.com

Make and use a "mind jar" to help calm children:

[Mind Jar Instructions](#)

- kumarahyoga.com

A video series focused on important mental health skills: [Child Mind Institute Series](#)

- childmind.org

Learn about phenology and make your own phenology calendar:

[Phenology Calendar Tips](#)

- naturescalendar.woodlandtrust.org.uk/

Build mindfulness through a research-based app developed at the University

of Wisconsin-Madison's Center for Healthy Minds: [Healthy Minds Program App](#)

- hminnovations.org

Receive the Center for Healthy Minds' Kindness Curriculum: [Kindness Curriculum Sign-Up](#)

- centerhealthyminds.org

Communication guides on how to talk about climate change with your child: [Our Kids' Climate Guides](#)

- ourkidsclimate.org

Resources for responding to the mental health impacts of climate change on children: [Climate Mental Health Network Resources](#)

- climatementalhealth.net

Hope & Collective Action

News outlets focused on positive climate news: [Anthropocene Magazine](#) and [The Daily Climate](#)

- anthropocenemagazine.org
- dailyclimate.org/good-news

A planning guide from the Children & Nature Network for organizing group activities: [Children & Nature Network Planning Guide](#)

- childrenandnature.org

Affordable, easy, and kid-friendly plant-based meal suggestions: [Kid-Friendly Plant-Based Meals](#)

- plantbasedonabudget.com

A guide to raising monarch caterpillars and releasing monarch butterflies at home: [Monarch Butterfly Raising Guide](#)

- saveourmonarchs.org

Explore public perceptions of climate through the Yale Program on Climate Change Communication: [Yale Climate](#)

[Opinion Maps](#)

- climatecommunication.yale.edu

PBS' guide on conducting a waste audit with your child at home: [PBS Waste Audit Guide](#)

- pbs.org/parents

An overview and guide on citizen science for kids: [Citizen Science for Kids](#)

- getthekidsoutside.com

Participate in a citizen science project like Project FeederWatch: [Project Feeder Watch](#)

- feederwatch.org

Climate actions recommended by the UN: [10 ways you can help fight the climate crisis](#)

- unep.org

A book-length resource by Manda Aufochs Gillespie that offers tips for sustainable parenting: [Green Mama: Giving Your Child a Healthy Start and a Greener Future](#)

- dundurn.com

Find (and join) climate action groups working on behalf of children. Here are a few: Science Moms, Moms Clean Air Force, Mothers Out Front, and Climate Dads

- sciencemoms.com
- momscleanairforce.org
- mothersoutfront.org
- ourkidsclimate.org/climate-dads

Apply for a Climate Fellowship from Our Kids Climate to learn with other like-minded parents or caregivers

- ourkidsclimate.org/climate-parent-fellowship/

A guide on talking about climate change with kids of all ages: [Your Guide to Talking With Kids of All Ages About Climate Change](#)

- nrdc.org

RESOURCES FOR MUSEUM STAFF

These resources are intended for Education & Programs, Exhibits, Marketing & Communications, and Facilities & Operations.

EDUCATION & PROGRAMS

Nature & Well-being

Guidance from the American Museum of Natural History on how to facilitate the web of life game and spark discussion about how everything is connected:

Web of Life

- amnh.org

Nature activities organized by age and milestones:

Pathways to Stewardship

- pathwayproject.ca

Educational resources on nature and well-being for children and families from the [National Wildlife Federation](http://NationalWildlifeFederation.org)

- nwf.org

Nature activities for children ages 3-8: [Health Powered Kids](http://HealthPoweredKids.org)

- healthpoweredkids.org

Changing weekly activities to get children outside and connected to nature: [Green Hour](http://GreenHour.org)

- thegreenhour.org

A collection of resources to help connect children, families, and communities to nature: [Children & Nature Network Resources](http://Children&NatureNetworkResources.org)

- childrenandnature.org

Guide for teachers talking about climate with kids:

Our Kids' Climate

- ourkidsclimate.org

Empathy & Resilience

Information on learning baby sign language

- babysignlanguage.com

Recommended books for children and teens: [Cooperative Children's Book Center's Eco-Reading list](http://CooperativeChildren'sBookCenter.org)

- education.wisc.edu

How to facilitate "emotions charades"

- youthfirstinc.org

Materials to support the creation of inclusive and impactful climate-centered STEM stories for young Black audiences: [BlackRep4Kids](http://BlackRep4Kids.org)

- blackrep4kids.knology.org

Building vocabulary and supporting group programs: [Animal Flash Cards](http://AnimalFlashCards.org)

- lakeshorelearning.com

Guiding movement with young children: [5 Animal Yoga Poses](http://5AnimalYogaPoses.org)

- kidsyogastories.com

Climate actions recommended by the UN: [10 ways you can help fight the climate crisis](http://10waysyoucanhelpfighttheclimatecrisis.org)

- unep.org

A book of developmentally appropriate activities for children ages two to five to help foster empathy, self-awareness, and joy, by Heidi France: [Mindfulness for Little Ones](http://MindfulnessforLittleOnes.org)

Activity cards to foster mindfulness and kindness in children: [Mindful Kids: 50 Mindfulness Activities for Kindness, Focus and Calm](http://MindfulKids.org) and [Kind Kids: 50 Activities for Compassion, Confidence & Community](http://KindKids.org)

Build a board book library for children ages birth to two:

- "Alpaca Will Be There," by Callie Christensen and Kelly Oriard
- "Weathering the Storm," by Callie Christensen and Kelly Oriard
- "The Rabbit Listened," by Cori Doerrfeld
- "Outside In," by Deborah Underwood
- "The Most Magnificent Thing," by Ashley Spires

Hope & Collective Action

Resources for finding hope in collective action from Moms Clean Airforce

- momscleanairforce.org/climate-change-hope/

100 eco-actions for families

- ecoactionfamilies.life/blog/why-families-are-important-in-the-fight-against-climate-change

Outdoor play programming: [Tinkergarten](http://Tinkergarten.org)

- tinkergarten.com

Climate action resources written by and for elementary educators: [Food Solutions: Climate Change Action for K-2](http://FoodSolutions.org)

- climategen.org

Information on navigating the impact of the climate crisis on children: [Responding to the impacts of the climate crisis on children and youth](http://Respondingtotheimpacts.org)

- childrenandnature.org

Storytelling videos featuring Indigenous artists and storytellers exploring traditional narratives and perspectives on nature and people: [Ways of Knowing: Haudenosaunee Stories and Culture](http://WaysofKnowing.org)

- wildcenter.org

For books and stories created by and featuring Indigenous communities, and an Indigenous publishing house and online bookstore: [Strong Nations](http://StrongNations.org)

- strongnations.com

EXHIBITS

Nature & Well-being

Extensive information on constructing exhibits with natural materials: greenexhibits.org

Realistic-looking animal puppets: [Folkmanis](#)

- [folkmanis.com](#)

Stuffed animals made from recycled plastic bottles: [Wild Republic](#)

- [shop.wildrepublik.com](#)

Sustainable exhibit design and construction tips: [Cambridge Seven's Sustainable Exhibit Design & Construction Toolkit](#)

- [cambridgeseven.com](#)

Empathy & Resilience

Information on trauma-informed design: [Trauma-Informed Design](#)

- [traumainformeddesign.org](#)

Communication guides on talking to children about climate change: [Our Kids' Climate Guides](#)

- [ourkidsclimate.org](#)

Sustainable exhibit resources: [greenexhibits.org](#)

Hope & Collective Action

Find climate action groups working on behalf of children. They have great resources: Science Moms, Moms Clean Air Force, Mothers Out Front, and Climate Dads

- [sciencemoms.com](#)
- [momscleanairforce.org](#)
- [mothersoutfront.org](#)
- [ourkidsclimate.org/climate-dads/](#)

MARKETING & COMMUNICATIONS

Empathy & Resilience

Research on how lowering carbon emissions protects children's health: [Climate Solutions for Health](#)

- [climatesolutionsforhealth.org](#)

To receive the Center for Healthy Minds' Kindness Curriculum: [Sign-up to receive the Kindness Curriculum](#)

- [centerhealthyminds.org](#)

Hope & Collective Action

Find climate action groups working on behalf of children. They have great resources: Science Moms, Moms Clean Air Force, Mothers Out Front, and Climate Dads

- [sciencemoms.com](#)
- [momscleanairforce.org](#)
- [mothersoutfront.org](#)
- [ourkidsclimate.org/climate-dads/](#)

Information on how to help your community develop more pro-children climate policies and connect your museum's work to your community's climate policies: [US Early Years Climate Plan](#)

- [earlyyearsclimateplan.us](#)

A guide on starting a green team at your museum: [Green Team Guide](#)

- [aam-us.org](#)

Essential tips from Ayana Elizabeth Johnson and Katharine K. Wilkinson, authors of *All We Can Save*: [All We Can Save](#)

- [time.com](#)

How to find joy when taking climate action: [The power of joyful climate action](#)

- [yaleclimateconnections.org](#)

For a book club or group focused on climate action: ["What If We Get It Right?"](#)

By Ayana Elizabeth Johnson

- [getitright.earth](#)

FACILITIES & OPERATIONS

Nature & Well-being

How to encourage no-emission transportation: [Bicycle Benefits](#)

- [bicyclebenefits.org](#)

How to recycle plastic bags: [Plastic bag recycling bins](#)

- [recyclingbin.com](#)

Battery recycling: [Battery recycling container](#)

- [tcrwusa.com](#)

Empathy & Resilience

Tips on creating audience-centered, personalized museum experiences and collecting visitor and staff feedback: [Museum 2.0](#)

- [museumtwo.blogspot.com](#)

Tips on how to build the skill of appreciation: [Appreciating Friends and Loved Ones](#)

- [hminnovations.org](#)

Tips on how gratitude can contribute to your work culture: [How gratitude can transform your workplace](#)

- [greatergood.berkeley.edu](#)

Hope & Collective Action

Sustainable building and energy practices, food service, landscapes, horticulture, and waste & water resources: [Phipps Conservatory's Climate Toolkit](#)

- [climatetoolkit.org](#)

Tips on encouraging plant-based foods while maintaining dietary freedom of choice: [Greener by Default](#)

- [greenerbydefault.com](#)

COMPILATION OF “KEEP IN MINDS”

An addendum supporting parents and caregivers

We know that caretakers coming to our museums are increasingly overwhelmed with pressures that complicate raising children. The world is roiled by climate change and geopolitical conflict, compounding the stressors of daily life. We know that all caregivers want the best for their children, and that by empowering caregivers, we empower the whole family.

Your role as an informal educator is to support each family’s experience in your museum, meet them where they are, free them of guilt or feelings of judgment, and serve as a welcoming face in your museum spaces.

The Climate Action Playbook is filled with little boxes of tips for caregivers and staff, each one beginning with “Keep in Mind.” These small nuggets of wisdom and kindness are designed to allow caregivers to let go of their worries about doing things perfectly. We have compiled them here for you to incorporate into your daily work and practices.

By sharing these ideas, we hope you can help unburden parents and caregivers and show them that they have the tools to give their children what they need. These nuggets also help you give caregivers permission to let go of things that really don’t matter; you can help them focus on their role as their child’s first and most important teacher and ally.

VISITORS

- No need to worry about your infant or toddler getting a little dirty or, within limits, putting sticks, leaves, and other natural objects in their mouth. They’re building a strong immune system that can ultimately protect them from harmful bacteria in their local surroundings.
- Refrain from using negative language when talking about other people or perspectives. Instead, model a generous spirit when mentioning people with whom you may disagree.
- Try not to be overwhelmed by all the possible pro-climate actions you could be doing. Focus on incorporating environmentally friendly actions that feel doable. Maybe that means starting to recycle or compost, taking the bus or biking, or bringing a reusable bag to the grocery store. Be patient with yourself. Creating new routines takes time. Remember that you can also be a powerful role model for self-love and gentleness.
- Don’t worry about knowing every plant and animal name or natural process. Sharing your enthusiasm and showing genuine interest in your child’s thoughts and discoveries matters most.
- Resist solving all your child’s problems for them. Trying, failing, and trying again builds confidence and resilience.
- No need to burden children by bringing up climate change, or even reference that it will become their generation’s problem. Celebrate outdoor caretaking and community-building and avoid putting pressure on any single action.
- No need to eliminate all risk from your child’s life outdoors. When kids challenge themselves to climb a little higher, hold on a little longer, or walk a little farther, they gain an authentic sense of accomplishment. “I did it!”
- You don’t need to teach young children facts about climate change. Instead, meet them where they are, listen to their concerns, answer honestly, and nurture their curiosity about nature. Focus on positive climate solutions and build a trusting relationship to support their emotional well-being.
- Don’t force your children to participate in collective action opportunities like political marches or demonstrations in hopes of inspiring engagement if you sense anxiety, fear, or unease, or if you have any concerns about their safety and well-being. While it is tempting to want to model engagement, it can also backfire if your child is anxious or ill at ease.

MUSEUM STAFF

- Teaching children to connect with and love nature is age-appropriate climate education. You don't need to teach young children facts about climate change. Overwhelming young children with bad news about the environment can turn them off to nature just when they should be appreciating it most. Help caregivers understand that connecting young children with nature is an age-appropriate conservation and climate action. It lays the foundation for future caring and action.
- For very young children, read stories about resilient kids or picture books that inspire wonder, empathy, and a sense of connection with nature, rather than factual books about climate change.
- Caregivers of very young children are adapting to many changes and feel a strong sense of responsibility about doing the right things. Be gentle. Make suggestions. Emphasize making one manageable change at a time. Recognize that they have limited time. Mention the value of meeting parents with children of similar ages.
- Don't brush off or minimize children's questions. Answer honestly and with a sense of hope. While you don't want to trivialize their concerns, you don't want to add to their anxiety or create feelings of mistrust when they begin to understand the complexity of the world. Try saying, "Yes, I heard about that too and I'm concerned. There are a lot of adults working on these problems – and when you

are older, you can help, too. For now, how can we make things better in our neighborhood?"

- Don't worry if you forget to be kind to yourself or others sometimes; it happens to everyone. Kindness is a mindset, and each day offers new chances to grow.
- Don't forget to think about what happens to "make & take" projects after visitors leave the museum. Use a sustainability lens as you select your program materials and consider what happens to "left-behind" projects. Once recyclable plastics have been glued or painted, they can no longer be recycled.
- Don't worry about knowing every animal name or natural process. Sharing your enthusiasm and showing genuine interest in child's thoughts and discoveries matters most. Stay curious!
- Don't insist that children consider your feelings as equal to their own when modeling empathy. Though they are growing more concerned about others, children in this age group are still intensely self-focused.
- Don't talk about doom and gloom scenarios when kids bring up climate change or other environmental problems. Instead, focus on the positive things people are doing to help (including the actions your museum is taking) and encourage them to enjoy nature.
- Be aware that while simulated natural environments made primarily of synthetic materials

may promote interesting and worthwhile physical and dramatic play, their ability to connect young children to nature is limited. Without living things and natural materials, young children cannot reap the full benefits of nature play. There's no substitute for the real thing.

- Stay away from notions of a problematic future, as children this age live primarily in the present. Even so, they can still feel overwhelmed. Staying in the present will help them stay calm and feel positive.
- Children's experiences are different – in your community and around the world. Do your best to represent various points of view and lived experiences in your representations of homes, feelings, values, capacities, and opportunities to take care of community members and the earth.
- Nature-based media should be a supplement to, not a substitute for, interacting with living things, natural materials, and outdoor experiences. When children have ample time to play outdoors and connect with nature, they use their senses, test their limits by taking small risks, and form relationships with their wild animal neighbors. Digital media can be a useful window to view nature but it lacks vital sensory opportunities.
- Avoid doom and gloom images and messages (for example, no images of starving polar bears floating on icebergs, or negative messages about how much we have to lose). These kinds of

messages can stoke fear and anxiety rather than hope and action and can be detrimental to young learners.

- Don't overwhelm caregivers or make them feel guilty by providing complicated ideas that seem unattainable. Encourage adults to share responsibility with their children and to take small steps. Every action matters!
- You don't have to do it all at once. Find something you're passionate about and start there. Start a composting program or herb window garden in the staff kitchen, or install bird feeders outside of your building.
- Don't assume changes you've made to your facility are visible to visitors and staff. Call them out and talk about how new practices/procedures/infrastructure benefit human and planetary health. Talk about carbon emissions reductions, for example, in terms that matter most to the people you serve (financial savings, health impacts, environmental impacts/savings, or all three).
- Don't think you have to do this alone. There are likely other staff members interested in and committed to sustainability. Working together as an organization and identifying environmental champions will benefit everyone.
- By supporting families as they experience nature in your space, you are giving them the opportunity to make significant connections with animals, plants, and the natural world, forging bonds that can last a lifetime.

Children are naturally drawn to nature – support their joy and discovery.

- You play a crucial role in fostering empathy and resilience. The best way to support children is to practice these skills yourself. By being a kind and supportive role model – toward others and yourself – you help children learn by example.
- Just by being in spaces with children and supporting them, you are an active part of their community, supporting their growth and well-being. By encouraging collaborative play, you help children build key social skills and help them learn how to effect change.

LITERATURE REVIEW:

CLIMATE CHANGE UNDERSTANDING, MENTAL HEALTH IMPACTS, AND IMPLICATIONS FOR EDUCATION IN EARLY CHILDHOOD

Jessica Kleczka

Introduction

Children and young people are the most vulnerable to climate change, both in their emotional and physical health. They are also the most populous demographic of our world. The psychological and emotional strain of climate change on this vulnerable demographic expresses itself in a multitude of forms, from climate anxiety and ecological grief to conditions akin to stress disorders. **This review of literature on children's mental health explores the relationship between climate distress and its potential to encourage pro-environmental behavior.**

The literature stresses the importance of direct interaction with nature for children’s development, as well as creative methods for increasing climate understanding. Active engagement and education in environmental issues will be essential to successfully channel children’s emotional responses into positive action. Education, family, and community play a crucial role in fostering resilience and activism. There is a need to transform educational approaches at multiple levels to integrate sustainability, political engagement, and emotional resilience into learning.

Overall, the literature makes the case for child-inclusive practices in sustainability education and the development of a comprehensive approach to prepare young global citizens for the Anthropocene.¹ Today, young people make up 41% of the global population. According to the United Nations in 2020, 25.4% are 0 to 14 years old, placing them at the forefront of experiencing and addressing climate change impacts.

Some significant research gaps have been identified, including the effects of early exposure to climate stressors and the need for longitudinal studies to better understand the impact of climate distress across developmental stages. There is also a need for more diverse study designs and to branch out beyond WEIRD (Western, Educated, Industrialized, Rich, and Democratic) countries.

This review was initiated by the IMLS-funded Caretakers of Wonder project. The project’s goal is to activate a network of museums and to demonstrate to children and the adults who care for them that museum professionals are actively working to address the climate crisis, as well as to equip children with what they need in our changing world. Each chapter has an introduction and conclusion for the various elements of this literature review. Also in each chapter are more

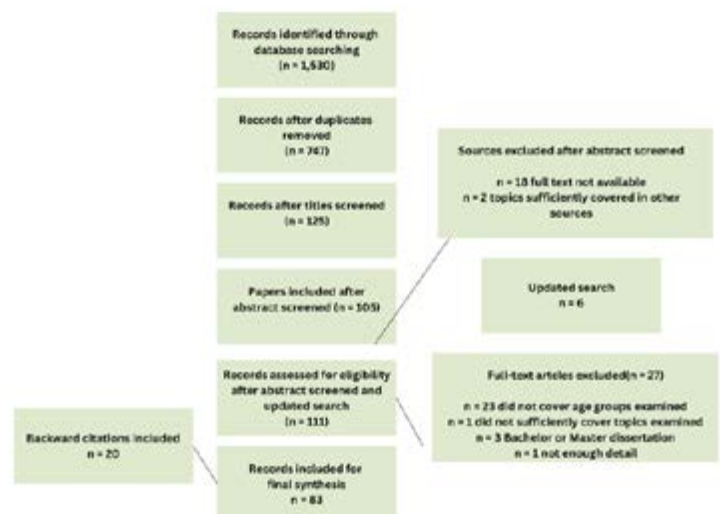
complex explorations of concepts and facets of the topics explored – we have called these “deep dives.”

The goal of the Climate Action Playbook, an educational structure supported by industry expertise, is to help children build empathy and to love nature. Conclusions drawn from this research have been interwoven into the framework.

Research method

Search terms:

- “Climate change” children OR “young children” OR children wellbeing OR engagement children OR engagement “young children”
- “Climate anxiety” children
- Climate change engagement children OR “young children”
- Climate change education “early childhood” OR “young children”
- Climate change “human flourishing” “early childhood”
- Climate change understanding “early childhood”



1. Anthropocene: a geological epoch marked by significant human impact on the Earth [this term is used colloquially but is not yet formally recognized by science]

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CHAPTER 1: MENTAL HEALTH AND ECO-ANXIETY IN EARLY CHILDHOOD

Introduction

Children and young people are increasingly distressed about climate change and experience negative emotions like sadness and fear, as well as mental health phenomena including climate anxiety and ecological grief. This distress can lead to symptoms similar to stress disorders,² especially after witnessing severe weather events. Indigenous youth are particularly affected due to unique cultural challenges.

However, this emotional response can also motivate and be ameliorated by pro-environmental action. Supporting children to be proactive against climate change and providing positive coping strategies, such as finding meaning in challenges and fostering community connections, is crucial. Continuous exposure to climate stressors during early development can hinder growth, highlighting the need for proactive solutions and youth-focused support.

Conclusion

The research overwhelmingly points to the crucial need for children to have supportive environments that help them not only to deal with the climate crisis emotionally and intellectually, but also to take meaningful action. Support is key.

1. Promote meaning-focused coping strategies:

Schools, families, and communities should encourage children to adopt meaning-focused coping strategies such as positive reappraisal (meaning-based coping, stressful events reframed as benign, valuable, or beneficial). This approach acknowledges the climate crisis while shifting one's perspective positively, fostering feelings of self-efficacy and optimism.

2. Facilitate youth activism and engagement:

To counteract feelings of despair and helplessness associated with climate change awareness, institutions and communities can support and facilitate youth activism. By providing children and families ways to meaningfully connect with solutions, these groups of adults can give children a profound grounding in their own communities. Engaging in small actions and having a sense of control can mitigate the negative psychological impacts of climate awareness.

3. Create supportive environments for open climate conversations:

Schools and other youth-centric institutions should offer safe spaces for open climate discussions. Encouraging understanding, building resilience, and limiting exposure to sensationalized online information can help manage and reduce climate anxiety.

The increasing awareness and understanding of climate change among children and youth generally have led to a range of psychological responses. A large-scale Australian survey in 2019 found that 25% of children were afraid that the world would end within their lifetimes (Rousell & Cutter-Mackenzie-Knowles, 2019). This awareness can often be vicarious and perhaps unmitigated by adults through media and educational systems, and lead to emotions of worry, fear, sadness, and anger, alongside a sense of powerlessness about climate change impacts on their lives (Sanson, Van Hoorn & Burke, 2019; Gislason, Kennedy & Witham, 2021). 77% of UK children aged 8–16 worry about climate change at least once a month (Sanson, Padilla & Van Hoorn, 2022). Two thirds of teachers and parents in Australia report that children experience at least moderate stress and anxiety about climate change (Baker et al., 2021).

2. Stress disorders can include: adjustment disorder, generalize anxiety, panic disorders, post-traumatic stress disorder (PTSD), obsessive-compulsive disorder (OCD), and phobias

The term “ecological grief” has been coined to represent the feelings of loss, anger, frustration, and helplessness in young people due to the impact of climate change (Gislason, Kennedy & Witham, 2021). Indigenous youth, in particular, encounter unique cultural, community, geographical, and social impacts from climate change (Gislason, Kennedy & Witham, 2021).

Children from vulnerable communities are thought to be more at risk of eco-anxiety (Léger-Goodes et al., 2022). The wide array of psychological impacts includes feelings of overwhelm, distress, and hopelessness, and clinical issues such as depression, anxiety, and post-traumatic stress disorder, which is particularly prevalent among First Nations children and young people (Godden et al., 2021). A study of children aged 3–5 post-Hurricane Katrina highlights the importance of relationship-based treatment, including both caregiver and child, as effective support in post-disaster scenarios (Osofsky et al., 2015). A study by Bryant et al. (2017) explored the enduring impact of climate events on individuals, showcasing the prolonged mental effects on 7–8 year olds who were separated from their parents during an Australian bushfire and went on to be more likely to have an avoidant attachment style³ as adults.

Burke, Sanson & Van Hoorn (2018) emphasize the unequal impact of climate change on children, with those in geographically vulnerable locations and with weaker infrastructure, particularly in the developing world, facing the greatest risk. Exposure to extreme weather events and subsequent family stress and displacement heighten the risk of various mental health issues including PTSD, depression, anxiety, and sleep disorders, with case studies revealing a 15–30% prevalence of PTSD diagnoses post-disasters, and 57.3% recorded among Thai primary school students after the Asian tsunami.

Although young people worldwide are concerned about climate change, studies suggest varying

levels of worry, belief, and concern across the world (Sanson, Padilla & Van Hoorn, 2022). In particular, children’s concerns about climate change vary across countries, with higher worries reported in lower and middle-income countries (Lee et al., 2020). Recent years have seen mass involvement in movements like “Fridays for Future,” although increased awareness through this participation could have negative consequences for young people’s mental health (Clemens, von Hirschhausen & Fegert, 2020).

Emotional responses to climate change, including climate anxiety, are valid and potentially functional reactions to the climate crisis. Anxiety and worry, for instance, can signal oncoming threats and lead to pro-environmental behavior and action, although these should be balanced with hope and agency (Hayes, Barocas & Levy, n.d.; Martin et al., 2022). Negative emotional responses to the climate crisis may lead to action and pro-environmental behaviors, which in turn can help manage negative emotions and foster hope and optimism (Martin et al., 2022).

Despite psychological distress, children show willingness to take action, even more so than adolescents (Lee et al., 2020). It is essential to acknowledge and enhance this agency and engagement to build resilience and hope among children and youth (Sanson, Van Hoorn & Burke, 2019; van Nieuwenhuizen et al., 2021). It is imperative that children be surrounded by adults who can support children with open and honest conversations about climate change, and give them ways to cope with related stress, as well as facilitate meaningful and solution-based engagement.

Deep dive: Coping strategies

By engaging in even small actions, young people can offset the negative psychological impacts of climate awareness, underlining the role of active involvement and a sense of control in enhancing mental and emotional well-being. Biomedical

3. Avoidant attachment style: developed in children whose caregiver does not show care beyond essentials, and doesn’t give the child the attention they need to develop healthy relationships; this attachment style can lead children to ignore their own needs to maintain the relationship they have with their caregiver, and is characterized by their tendency to avoid emotions and a distrust of others later in life

research indicates that people are more prone to stress and related illnesses when they feel a lack of control over stress sources, experience uncertainty regarding the duration and intensity of the stress, perceive the stress as an indication of deteriorating circumstances, and lack adequate social support (Sapolsky, 2005). Of all people facing the realities of climate change, children especially feel these deep emotions and feel powerless against them.

In a study involving Swedish 12-year-olds by Ojala (2012), three coping strategies were identified:

1. Problem-focused coping
2. De-emphasizing the seriousness of climate change
3. Meaning-focused coping

This research found that although problem-focused coping, such as seeking information about climate change, may increase awareness and pro-environmental behavior, it could also exacerbate worry and general negative affect in children, particularly given their limited control over climate change actions. This anxiety is further heightened when children interpret climate change as a worsening and uncontrollable problem, consistent with Sapolsky's observations.

In contrast, Ojala (2012) found meaning-focused coping to be significantly related to positive effects such as increased life satisfaction, optimism regarding climate change, and pro-environmental behavior. This form of coping involves utilizing beliefs, values, and existential goals to maintain well-being and can include strategies like positive reappraisal, which acknowledges the stressor while altering one's perspective positively. Ojala observed that employing such meaning-focused strategies significantly countered negative affect in highly problem-focused children, fostering environmental efficacy and optimism concerning climate change.

Similarly, Trott (2021) emphasizes the importance of youth activism in mitigating the despair associated with climate change awareness.

Deep dive: Levels of exposure to climate change, and protective factors

The climate crisis affects children and young people in different ways depending on their level of exposure. Ma, Moore & Cleary (2022) highlight the differential burden caused by both direct and indirect climate change exposure pathways. Direct exposure involves first-hand experience of extreme climate events, leading to increased rates of PTSD, depression, anxiety, and other mental health issues. Indirect exposure involves the mental impact from observing or thinking about climate change without directly experiencing its impacts, leading to various environmental conditions like climate anxiety, eco-anxiety, solastalgia, and ecological grief.

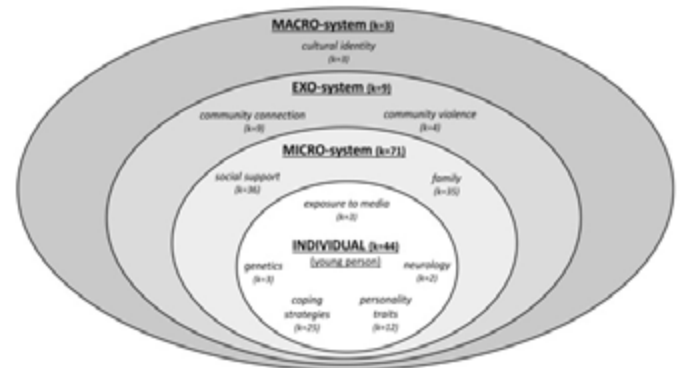


Fig. 1. Young people's individual, micro-, eco-, and macro-systems-level risk and protective factors associated with mental health impacts from climate change
Ma, Moore & Cleary, 2022

Protective factors⁴ at the individual level include engaging in pro-environmental behaviors and maintaining optimistic views, which could potentially mitigate climate change-related distress (Ma, Moore & Cleary, 2022). Religious or spiritual coping, though associated with higher rumination and PTSD, has

4. Protective factors: characteristics or conditions that interfere or minimize the effects of stress or trauma

been found to contribute to long-term growth (ibid). Family and social support function as significant micro-system level protective factors, whereas family conflict and coercive parenting styles pose risk factors (Ma, Moore & Cleary, 2022).

At the exosystem level, community connection as a protective factor shields against negative mental health impacts of climate change, while community violence poses a risk (Ma, Moore & Cleary, 2022). Cultural identity, especially for ethnic minorities and Indigenous youth, acts as a macro-system-level protective factor (ibid). However, these factors' impacts can vary significantly depending on the cultural context of collectivistic or individualistic values.

Concern for the environment, coupled with a hopeful outlook, leads to greater environmental action among children (Hayes, Barocas & Levy, n.d.), whereas climate despair can deter action (Baker, Clayton & Bragg, 2020). Crandon et al. (2022) analyze climate anxiety through a socio-ecological lens, emphasizing the role of schools in supporting young people's engagement with climate action. Conversely, not providing a safe space for climate conversations can be isolating for young people experiencing climate anxiety. Varied government attitudes and policies, along with unrestricted exposure to often sensationalized online climate change information, can further exacerbate children's climate anxiety (Crandon et al., 2022). Eriksen (2013) highlights potential connections between children's detachment from nature and the emergence of mental health challenges. Despite these challenges, children express hope, resilience, and motivation to contribute positively to climate change solutions. (Cuevas-Parra, 2020).

Deep dive: Children's development and climate change

In their 2021 study, Vergunst & Berry emphasize the particular vulnerability of early childhood (0-5 years) to climate-related stressors such as malnutrition,

dehydration, and exposure to toxins, which can directly and indirectly alter healthy cognitive maturation and psychopathological development by causing long-term physical health issues and delays in developmental milestone attainment. Their developmental model focuses on the consequences of climate anxiety or "solastalgia" – a term defined by Albrecht (2011) to describe distress caused by environmental change – on the developmental pathways and processes leading to both normal and abnormal development. These early maladaptive⁵ trajectories can lead to an accumulation of negative life events, further enhancing psychosocial stress, eroding mental health resilience, and undermining human capital within individuals and across societies. The indirect impact of climate-related stressors, such as large-scale disruptions leading to food shortages and reduced health services access, can further undermine healthy development.

Vergunst & Berry (2021) also describe new risks emerging in middle childhood (6-12 years), such as the vulnerability of forming social relationships to disruption from acute climate-change-related stressors like storms, floods, and wildfires, leading to increased psychopathological risk,⁶ including a range of disorders from attachment issues to anxiety disorders. Rasmussen (2023) echoes these findings, highlighting the particular susceptibility of children to the negative impacts of eco-anxiety due to their critical stages in psychological and physical development. Chronic stress from continuous negative experiences related to climate anxiety can hamper a child's ability to focus, increasing the likelihood of various health and psychological issues.

5. Maladaptive: not providing adequate or appropriate adjustment to the situation

6. Psychopathological risk: the likelihood of developing a mental disorder

CHAPTER 2: CLIMATE CHANGE

UNDERSTANDING AND ENGAGEMENT

Introduction

Children's perceptions of climate change are influenced by media, science communication, and complex psychological factors. Young people are concerned about climate change but feel they have little control over decisions, and sometimes adults shift responsibility to them.

Parents and teachers play a critical role in helping children handle stress about climate change, with older children experiencing more anxiety.

As children age, their understanding of climate change grows, and they recognize the need for significant societal changes. Young children can use various creative methods, like drawings and play, to express their understanding of science.

Children's literature on climate change is diverse, but some content may potentially foster skepticism or oversimplify issues by overlooking the broader human consequences of climate change. Games are seen as a potent tool for education and encouraging action.

The balance between hope and despair in climate education is vital. Exposing children too early to vast environmental issues may demotivate them. Knowledge alone doesn't change behavior, but fostering a sense of control can. Positive, community-based approaches help children feel capable of handling complex issues like climate change. Teaching a love for nature without inducing fear is vital for younger children. Constructive hope, without downplaying the climate crisis, is essential for developing pro-environmental behavior.

Conclusion

Involved adults can play a critical role in helping children handle stress about climate change and are uniquely positioned to bridge the current gap between overwhelming realities of climate change and the hope-giving connections to nature.

children with distressing information, educators and communicators should focus on constructive hope. This would involve presenting challenges while also emphasizing actionable solutions and fostering a sense of agency and control in children.

1. Make climate education more intersectional:

Children's literature on climate change shows a lack in presenting a holistic perspective, especially concerning human consequences and the need for social justice, and its content should be expanded. Tools like games can be effective in providing a more immersive and comprehensive understanding of climate change.

2. Promote constructive hope in climate

communication: Rather than downplaying the severity of climate change or overwhelming

3. Prioritize empowerment and engagement

in youth activism: It's essential to ensure that children's advocacy efforts are encouraged and facilitated by institutions and communities. Activism should focus on tangible, local actions that yield positive outcomes, making young people feel their contributions are meaningful.

Understanding and addressing children and young people's perceptions and attitudes toward climate change is a growing area of study. A number of complex psychological factors affect how individuals, including children, perceive

climate change, including the influence of media representations and science communication (Strazdins & Skeat, 2011).

Attitudes around climate change are also multifaceted. For example, young people in Australia express concerns about immense global challenges like climate change despite a generally hopeful outlook about personal futures (ibid). There are fluctuating levels of concern among children and young people about climate change, clouded by a “lack of future” feeling and a perception of little control over climate decisions. This is also influenced by a reversal of roles in climate discourses, with some adults abdicating responsibility for change to children (Strazdins & Skeat, 2011). The authors also stress that there is a general lack of data in this area of research.

Baker, Clayton & Bragg (2020) emphasize the crucial role of parents and teachers in offering support and facilitating necessary conversations to help children navigate feelings of stress and anxiety. The older the child, the higher the level of stress and anxiety tends to be, which demonstrates a clear need for adult intervention and support in discussing and addressing climate change concerns.

Hahn (2021) discusses the early establishment of environmental concern (between 7-10 years) and subsequent decline in adolescence (age 14 onwards). Despite this decline, emotional intelligence, hope, and trust in science can contribute to sustained engagement in pro-environmental behaviors among adolescents. Sanson, Padilla & Van Hoorn (2022) point out that understanding of climate change expands as children grow older, and that children can grasp the need for substantial structural, institutional, and policy changes beyond individual efforts for achieving a sustainable future.

Child-based climate communication is a pathway to inspire climate action among both children and adults, as children’s unique perspectives and accessibility through schools make them valuable communicators in navigating and discussing climate change issues (Lawson et al., 2018). Pinto & Grove-White (2020) emphasize the importance of

clear and consistent information in aiding children’s understanding of climate change. This clarity helps children process their feelings and take informed action, mitigating anxiety and feelings of powerlessness.

Britsch (2021) explores the ways young children express their understanding and perceptions of climate concepts through non-narrative compositions. This innovative approach to literacy development allows children to engage in the construction of understandings and the use of graphic symbols, both pictures and written language, even before formal schooling begins. Children can utilize various channels such as playing, talking, listening, drawing, and writing to contextualize their scientific experiences and understandings.

Youth activism tends to be a form of engagement in late childhood and adolescence, and encompasses both individual and collective efforts. These actions are not solely determined by choice; they are also variously enabled and constrained by institutional and structural forces (Trott, 2021). Youth activism is typically focused on changing climate-relevant routine behaviors and social practices, such as larger-scale public policies; activism primarily takes place within young people’s personal spheres of influence, such as family and peer networks, rather than in the broader public sphere.

Deep dive: Children’s literature

Children’s literature on climate change covers a diverse range of themes and approaches. Swain (2020) highlights the educational role of picture books, which illustrate the devastating impact of human activity on nature and vice versa, fostering not only awareness but also potentially climate anxiety among young readers. Such books teach the responsibility of both young and older generations to protect and support the regrowth of forests and wild places, stressing the resilience of nature when allowed to flourish uninhibited.

However, the spectrum of children’s literature on climate change shows a considerable gap, especially in terms of delivering informational material concerning human consequences of the

climate crisis. Benevento (2022) contends that these books often lack material regarding the humanization of climate change from a social justice perspective. Despite the emphasis on the urgency of climate change and the call for both individual and collective action, current approaches in children's literature might inadvertently contribute to climate skepticism and denial. Benevento (2022) also highlights the challenges in communicating climate change to children, noting that overemphasis on arctic settings and animals may distance children from the immediate effects of climate change. Providing children with visualization and focusing on empathy, community involvement, and active citizenship are suggested as more effective approaches in encouraging action on climate justice.

Van der Beek & Lehmann (2022) echo this sentiment by pointing out a significant challenge within children's environmental literature: the simplification of the complex issue of climate change. The authors criticize the tendency of environmental texts for children to homogenize their audience, assuming uniform access to resources and similar consequences of climate change for all children. This generalization may lead to ineffective communication and education regarding climate change and its multifaceted impacts.

Beyond literature, Fernández Galeote et al. (2021) propose games and gamification as powerful tools for fostering behavioral change and climate change education. The authors criticize the information deficit model and argue for a holistic approach involving cognitive (knowing), affective (caring), and behavioral (acting) connections for genuine engagement with climate change. Gamification can enhance these connections by offering engaging, immersive, and educational experiences, which in turn can motivate and empower players to take action.

Deep dive: Hope vs. despair

Various sources emphasize the importance of appropriate messaging and educational strategies for children. Sobel suggests that fostering a sense of agency and control can lead to knowledge, intention, and eventually pro-environmental

behavior, alleviating the overwhelmingness and helplessness that can arise from confronting intimidating environmental challenges.

Sobel (2007) warns against prematurely recruiting children to address overwhelming environmental issues, as it may cultivate feelings of helplessness rather than motivation. Contrary to the conventional assumption popular in the 1980s and 1990s in environmental education, increased knowledge does not necessarily translate into altered behavior or meaningful connection to nature.

This is echoed by Gislason, Kennedy, & Witham (2021), who argue for a shift away from the "narrow framework" of focusing solely on the negative impacts of climate change. They advocate for strength-based community and participatory approaches, presenting challenges in age- and stage-appropriate manners, and ensuring the tasks undertaken by children and youth are local, tangible, and yield positive and measurable outcomes. Such approaches enhance mental health and engender a sense of achievement and ability to manage complexity as children grow older.

Emphasizing the importance of constructive hope, Godden et al. (2021) stress that downplaying the seriousness of climate change does not aid environmental efficacy. Instead, constructive hope is closely linked with positive environmental behavior, reinforcing the role of optimism and forward-looking perspectives in fostering environmental responsibility. Furthermore, Wilson (2020) advises to not necessarily use terms like "sustainability" with preschool children or burden them with the harsh realities of environmental degradation.

Instead, the focus should be on nurturing an appreciation and love for the natural world, aligned with the inherent inclination of young children to protect and cherish the environment. This approach prevents the induction of fear and helplessness and promotes the development of a positive environmental ethic from a young age.

CHAPTER 3: ENVIRONMENTAL AND SUSTAINABILITY EDUCATION

Introduction

Education has an evolving role in the Anthropocene, an era defined by human influence on the planet. A number of scholars advocate for a transformative educational approach that values sustainability and the interconnectedness of humans and nature. They also call for a shift from traditional schooling to frameworks that promote care for the environment and address climate anxiety with action-oriented education.

There is a need for schools and formal education to foster political engagement and emotional resilience regarding climate change, which is echoed by the growth of nature-based preschools and the significant role of direct environmental experiences in early education.

The literature also reveals gaps in teachers' readiness to address sustainability, a disconnect between educational rhetoric and reality, and the limited incorporation of sustainability goals in curricula. Despite the identified gaps, as well as avoidance of sustainability discussions due to their distressing nature, there is evidence of growing integration of sustainability education in early childhood settings, although more systemic support is needed.

The literature highlights the benefits of outdoor learning and cautions against a narrow focus on nature-based education without broader sustainability learning. It calls for a balance between safety and engagement with nature and stresses the importance of a systematic approach to sustainability education to cultivate informed and active global citizens from a young age.

There is an overarching need to integrate sustainability into education – while there has been progress, much remains to be done to ensure that sustainability education is both comprehensive and effective for all children.

Conclusion

1. Reimagine schools as communities of care:

Schools should act as communities where caring for the environment is a shared value. This involves creating a culture and curriculum that encourages active participation in real environmental issues and nurtures a sense of responsibility and care among students.

2. Adopt a holistic approach to education:

Schools should implement a comprehensive curriculum that integrates hands-on environmental problem-solving, a supportive physical and social setting for nature interaction, and partnerships for reciprocal sustainability learning.

3. Focus on collective action: Educational programs should address climate change and energy education with an explicit focus on collective action, considering the broader role of energy systems, policy, and politics to promote systemic transformation.

4. Engage with quality environments and sustainable practices:

Provide children with access to high-quality natural or naturalized environments and adopt sustainable practices in educational settings to model and teach sustainable living.

5. Incorporate Indigenous perspectives and participatory approaches:

Sustainability education should include Indigenous knowledge and perspectives, fostering a holistic understanding of environmental issues. Participatory, interdisciplinary, and creative methods should be used to engage students in understanding and addressing climate change.

The Anthropocene has created the need for a revised understanding of human-nature relations and highlighted the importance of teaching children to care for various life forms, promoting a perspective of interconnectedness and eliminating

the flawed nature/culture separation (Sjögren, 2023). The Anthropocene further necessitates a transformative approach to education (Wolff, Skarstein & Skarstein, 2020). Beyond just improving existing systems, there's a call to radically shift perspectives, pushing for educational frameworks that prioritize narratives of sustainability and holistic well-being over consumerism. This approach will be vital in navigating the complexities of the current era, ensuring an authentic and positive childhood experience within the context of mounting climate and environmental challenges.

Crandon et al.'s (2022) socio-ecological perspective highlights schools' critical role in mitigating climate change and addressing climate anxiety among young people. Action-oriented education, rather than fear-based narratives, can empower young people alongside practical strategies that foster agency and adaptive responses to climate change. Accurate climate change understanding is crucial, without which misconceptions may exacerbate climate anxiety and limit mitigation efforts.

Baker, Clayton, and Bragg (2020) further emphasize the transformative power of schools not only in enhancing climate change knowledge but also nurturing political involvement and emotional resilience among students. The role of schools extends to socializing coping mechanisms and modeling sustainable change, which contribute significantly to students' development as informed and engaged global citizens.

The rise of early childhood environmental education globally underscores a commitment to fostering a sense of wonder, curiosity, and respect for the environment among young children (Born, 2018). Born highlights the significant growth of nature-based preschools and forest kindergartens, particularly in the United States, which emphasize extensive immersion in natural settings. This trend, which originated in Europe, aims to enhance children's engagements with nature (Born, 2018; Sobel, 2016).

Primary education plays a pivotal role in equipping all pupils with climate change knowledge, thus promoting inclusivity in the climate movement

(Pinto & Grove-White, 2020). But despite, for example, a growing desire among UK teachers for enhanced climate change education and greater school participation in climate awareness, a considerable proportion feel unprepared to educate on this issue, pinpointing a need for external support and adequate training (Taylor, 2019; Pinto & Grove-White, 2020).

Emphasizing the multi-dimensional aspect of Education for Sustainable Development (ESD), Reunamo & Suomela (2013) highlight the essential role of early childhood in promoting sustainable use of environments and resources. Direct experiences in various environments strengthen children's emotional and ethical connection to place and community, underlining the importance of participation, democracy, and social education from an early age (Reunamo & Suomela, 2013).

Duhn (2012) stresses the critical nature of early environmental learning in shaping lifelong care for the environment. However, she notes the prevalent culture of fear in early childhood centers in Western countries, which potentially limits children's interactions with outdoor spaces. This overprotection shows the need for a balanced approach to environmental education which ensures both safety and meaningful engagement with nature.

Deep dive: The current state of environmental and climate education worldwide

Around the world, educational systems and curricular frameworks have largely not embraced the sustainable development goals outlined by UNESCO in 1992 (Wilson, 2020). Despite the general acknowledgement of the importance of sustainability education, it remains weakly or not implemented in early teacher education (Engdahl & Furu, 2022).

Practitioners face both a knowledge-practice gap and a rhetoric-reality gap in sustainability education (Ärlemalm-Hagsér & Elliott, 2017). In the United States, a study found that the time dedicated to climate change in science classes is substantially low, with many teachers downplaying the human causes of climate change (Nxumalo, 2018).

Furthermore, the predominant educational models and trends are increasingly moving towards teacher-directed instruction and high-stakes testing, limiting opportunities for exploratory and inquiry-based learning (Nxumalo, 2018; Ritchie & Phillips, 2021).

Teachers often avoid discussing the climate crisis or sustainability issues, labeling them as too distressing for children to grapple with (Ginsburg & Audley, 2020). This avoidance, combined with a lack of time and pressure to teach academic content, makes it challenging to engage children in sustainability education daily. Despite widespread support for sustainability education, systematic implementation in schools is challenging without broader changes to the educational system (Ginsburg & Audley, 2020).

In England, the primary national curriculum lacks reference to climate change or sustainability, and geography field trips, which provide opportunities for outdoor learning, are often not fulfilled by many schools (Jones & MacLeod, 2022). In the United States, nature-based preschool programs, an exception in the educational landscape, often embed sustainability education into curricula (Ginsburg & Audley, 2020). However, simply spending time in nature is insufficient for fostering a sense of agency in environmental change. Education about and for the environment, along with nature exposure, is crucial for promoting long-term sustainable lifestyle practices with children (Ginsburg & Audley, 2020).

In Australia, the national Early Years Learning Framework educates all children from birth to age five about their connection and contribution to the world through a curriculum centered on diversity and environmental sustainability (Bell, Jean-Sigur & Kim, 2015). Despite this, a study conducted by Davis (2008) highlights a significant lack in practice, resources, and examination of education for sustainability in the early years. The study underscores the critical role of stimulating early experiences and positive interactions with adults in nurturing young children's development. Under the Sustainable Planet Project, Australian educators incorporated personal interests like gardening, wildlife conservation, and recycling, finding that even very young children could critically respond to

and actively participate in addressing environmental issues (Davis, 2008).

Highlighting a case study from Sweden, Straume (2019) references a study on eco-school teachers and eco-teacher education (Stagell et al., 2014), which assessed the actions teachers encouraged their young students to undertake. The findings indicated a preference for actions related to the private sphere, such as household, consumption, and recycling within the school context, avoiding potentially political actions. The study argues for the need for "transformative learning," suggesting that merely learning about the environment and its issues is insufficient. It calls for a comprehensive shift in perspective to thoroughly prepare students for tackling environmental challenges.

In both the Australian and Swedish contexts, the importance of a robust, well-rounded sustainability education is evident, promoting not only awareness but also active participation and critical thinking in young learners. Despite the progress and initiatives in these countries, the studies suggest there's more to be done to fully integrate sustainability education into early childhood learning environments, emphasizing the need for a systematic approach to instilling these crucial values and skills in young children.

In early childhood education, the focus is often limited to nature-based education, sidelining the broader concept of sustainability. Although nature-based preschools offer a lot of opportunities for engagement with the environment, they may inadvertently reinforce anthropocentric thinking and perpetuate a nature-culture divide by not also focusing on sustainability (Wilson, 2020). Despite the slow initial engagement with sustainability, there is a quickening pace in the integration of education for sustainability in early childhood centers (Elliott, 2010). Successful integration often involves collaboration with local communities, creating synergies that benefit all participants (Elliott, 2010; Vaealiki & Mackey, 2008).

While educational systems are recognizing the importance of sustainability, early childhood education often focuses more on environmental

education, neglecting the holistic nature of sustainability (Wilson, 2020). Research suggests that this tendency can lead to a limited understanding and appreciation for nature and sustainability, making it essential to shift the educational focus to a more biocentric viewpoint and mindful learning, ensuring a comprehensive and embedded sustainability education (ibid).

Despite the “back to the woods” movement and the promotion of nature exposure in education, educators must also prioritize education about the environment to ensure the cultivation of long-term sustainable lifestyles and practices (Ginsburg & Audley, 2020). While nature exposure is associated with numerous benefits for children, including reduced stress and improved academic achievement, it must be complemented with robust sustainability education to ensure the development of pro-environmental behaviors and attitudes in adulthood (ibid).

Barriers to sustainability education, such as a lack of classroom time and money, parental beliefs about the risks of outdoor education programs, and lack of child agency, further emphasize the need for a systematic and supportive approach to integrate sustainability education in early childhood curricula (Ginsburg & Audley, 2020). The broad integration of sustainability education will contribute significantly to addressing the current gaps and challenges, ensuring a well-rounded and impactful education for sustainability.

Young people often learn about climate change in a de-politicized context in schools, framing it as a technical problem rather than a human-centered issue of global significance with socio-ecological consequences (Trott, 2021). This narrow view does not equip them with the necessary perspectives to understand and address the multifaceted challenges of sustainability, reinforcing the need for a comprehensive sustainability education from an early age.

Despite the challenges, early childhood education teachers are integrating sustainability in their projects and themes, involving children in practices of collaborative exploration, such as monitoring and

saving animals and cleaning up the environment (Engdahl & Furu, 2022). These actions align with the recommendations in the Roadmap for Education for Sustainable Development (UNESCO, 2020), albeit unrecognized in policy reports or media.

Deep dive: Effective approaches to environmental education

A number of publications emphasize the significance of active and experiential learning. MacDonald (2015) notes the importance of observing and responding to children’s natural curiosities, fostering a learning environment that aligns with their interests and questions. Older children, specifically those aged 4 and 5, prove beneficial in leading inquiry- and project-based learning, enhancing the learning experience for their younger peers by engaging them in sustainability-related conversations and activities.

Active, play-based learning approaches, especially those embedded in nature and social interaction, are reported as particularly effective (Ardoin & Bowers, 2020). Play and exploration in diverse environments significantly contribute to children’s knowledge construction, influencing their present and future values, beliefs, and overall well-being (Luff, 2018). Engaging children in local, hands-on projects, particularly those that span over an extended period, amplifies their learning experience (Lawson et al., 2018). This approach, coupled with the support of enthusiastic teachers and parental involvement, promotes intergenerational learning and engagement.

In addition to traditional learning methods, Wals (2017) highlights the value of intergenerational dialogue and ecologies of learning. Practices such as living by example, fostering open dialogue, providing space for experimentation, and offering positive reinforcement are essential in facilitating impactful learning experiences. The arts also emerge as a powerful tool in educational contexts, fostering creative and critical thinking and enabling in-depth exploration of sustainability issues (Chapman & O’Gorman, 2022).

Rooney (2016) emphasizes the significance of real-world, entangled learning experiences, such

as learning “with” rather than “about” weather, a concept highlighted in Scandinavian studies where educational policy actively promotes outdoor play in various weather conditions. This approach nurtures a deeper, more interconnected understanding of human and non-human nature relationships (Weldemariam, 2020). Rooney, Blaise & Royds (2020) use a similar concept of “weathering-with pedagogies” which eradicates the human-nature binary and fosters a more integrated, responsive learning environment.

Eriksen (2013) highlights the importance of local surroundings in fostering ontological security and harmonious cultural formation for children, linking this to sustainable development (SD). The emphasis on taking local contexts as a starting point for SD strategies is rooted in the earliest official documents and definitions pertaining to SD. Duhn (2012) stresses the effectiveness of developing a sense of place among teachers dealing with overwhelming global topics like climate change. Employing a pedagogy of place, discussions surrounding global issues such as plastic pollution, fossil fuel use, and international recycling contexts such as in Bangladesh, allow for more manageable and contextualized exploration. This approach enables fostering an understanding of interconnection, from local to global, presenting “place” as a fluid concept that can be expanded to encompass regional and global perspectives, and facilitating careful examination of complex topics.

A multifaceted approach that blends active, experiential, and play-based learning with real-world experiences and arts integration emerges as effective in advancing environmental and sustainability education, ensuring children develop a deep, comprehensive understanding and appreciation for sustainability and the environment.

Deep dive: Equity, culture, and justice

There is a crucial need to educate children about global interdependency and promoting global citizenship and solidarity within Education for Sustainable Development (ESD) (Siraj-Blatchford & Huggins, 2015). The authors highlight various international educational initiatives, such as the Exeter Ethiopia Link and the World Organization

for Early Childhood partnerships. However, they express concern about the uncritical and potentially detrimental execution of such initiatives, which might inadvertently perpetuate cultural supremacy and limited multicultural approaches. They advocate for the promotion of intercultural capabilities and a whole-setting approach to sustainability in educational settings to counteract these issues. This perspective is similar to Ritchie & Phillips (2021), who stress the importance of embedding Indigenous values of relationality, trust in children’s judgment, and collective identity in childhood pedagogies. They suggest that this approach could counteract the Western inclination towards binaries and othering, providing a more holistic and inclusive educational framework.

Kim & Dreamson (2020) further elaborate on the influence of individualistic and collectivistic factors in shaping the understanding of sustainability. They advocate for the integration of sustainable practices in children’s daily activities and emphasize the significance of cultural inclusiveness and diverse perspectives in interpreting and implementing sustainability. Similarly, Bell, Jean-Sigur & Kim (2015) report that in Sweden, the national curriculum for preschool children already incorporates essential values for sustainable development, including solidarity, tolerance, equality, and justice. Along similar lines, Nxumalo (2018) argues the necessity for culturally relevant climate change education, particularly for children from historically marginalized communities, ensuring that sustainability education is inclusive, diverse, and globally oriented, and recognizes the interconnectedness of communities worldwide.

Deep dive: Recommendations from the literature

To advance environmental and sustainability education, Sobel (2007) emphasizes the critical need to conceptualize schools as communities of care. Davis (2010) stresses the necessity of a holistic approach within educational settings to achieve sustainability, which entails a robust curriculum and pedagogy where children actively engage in addressing real environmental issues, a conducive physical and social environment for interacting with nature, and established

partnerships and communities for a two-way sustainability learning process. These aspects mutually reinforce each other to make sustainability education more effective (Davis et al., 2005).

To achieve this, Fullan (2003) suggests beginning with a context-specific moral purpose or direction. He promotes a collaborative learning culture, complementing child interactions with informed, reflective practice and celebrating small wins both within and outside the community. Jorgenson, Stephens & White (2019) advocate for an explicit focus on collective action in climate change and energy education. They emphasize the need for a transitions perspective, moving beyond individual pro-environmental behavior to address energy system transformation and the policy and politics surrounding it.

David (2007) recommends ensuring children's engagement with quality natural or naturalized environments and adopting green housekeeping practices in educational settings. These everyday actions can also educate the broader community about sustainability. Rousell & Cutter-Mackenzie-Knowles (2019) highlight the necessity for participatory, interdisciplinary, and creative approaches to climate change education, involving young people in navigating the complexities of climate change beyond top-down, science-based methods.

Ritchie (2016) explores the importance of incorporating Indigenous perspectives, acknowledging the historical exclusion of these vital voices in sustainability education. This approach promotes a greater role of the more-than-human world in education, fostering a commitment to act in the planet's and its cohabitants' interests. Hayes, Barocas & Levy (n.d.) advocate offering regular opportunities for children to learn about climate change and engage in actions that contribute to environmental protection, promoting a proactive approach to environmental issues.

Lastly, Gislason, Kennedy, & Witham (2021) suggest incorporating child and youth-suited

projects like arts-based activities, gardening, and nature-based projects. These initiatives are tailored to address local environmental issues and engage young learners actively in environmental and sustainability education, mirroring recommendations in the literature to enhance the impact and reach of sustainability education through holistic approaches.

CHAPTER 4: NATURE CONNECTION IN EARLY CHILDHOOD

Introduction

Research indicates that connecting with nature is crucial for children's emotional and mental well-being, offering stress relief, boosting self-confidence, and improving their ability to manage complex emotions. The concept of biophilia⁷ suggests that an affinity for nature is inherent in humans, advocating for the integration of environmental education early in life. If nurtured sufficiently, this connection to nature may lead to a lifelong commitment to environmental stewardship.

The role of nature educators is becoming increasingly vital in fostering this bond between children and the environment. By engaging with nature – through playing in dirt, interaction with water, or learning about trees – children learn resilience, bravery, and control over their impulses. These experiences not only cultivate a child's understanding of their environment but also promote cognitive, physical, and social development.

Despite the rise in nature-based educational programs like forest schools, critics point out that they sometimes perpetuate a problematic, human-centered view of nature. This critique is rooted in a post-humanist perspective that advocates for decentering humans in education which suggests that children's experiences with nature should acknowledge the realities of the ecological crisis rather than limit them to picturesque natural settings.

The literature also emphasizes the importance of non-human animals to children's development, suggesting that animal interactions can enhance empathy and encourage a protective attitude towards the environment. Education strategies that include animal encounters can significantly enrich children's moral development. This should also extend to recognizing the role of plants and insects, to inspire a comprehensive ecological consciousness in children.

Conclusion

- 1. Introduce nature education early:** Implement environmental education in early childhood programs to cultivate children's inherent biophilic tendencies, nurturing a lifelong commitment to environmental stewardship.
- 2. Integrate hands-on experience:** Develop educational initiatives that provide children with tactile experiences with the elements of nature to help them build crucial skills such as resilience, courage, and self-control.
- 3. Broaden the scope of nature connection:** Ensure that children's educational experiences do not overlook the significant roles that plants and insects play in the ecosystem. Encourage the development of empathy towards all living beings
- 4. Adopt post-humanist⁸ education:** Revise early childhood education to include post-humanist perspectives that consider humans as part of an interdependent ecosystem. This should involve teaching about the importance of all life forms, including plants and insects, and their roles in the ecosystem, to encourage a balanced, non-anthropocentric view of the environment. Education should address the broader ecological impacts of human activity and promote an understanding of the environmental crisis in a way that is meaningful for children.

7. Biophilia: [hypothesis] the human desire to connect with nature and living things

8. Post-humanism: an idea/thought system that challenges the historically held view of humans at the center of all life; post-humanism encourages the consideration of the interconnectedness of all life

The relationship between children and nature is gaining unprecedented attention in both academic and practical areas, with a growing body of research exploring the profound effects of nature connection on various aspects of children's wellbeing. Significant correlation has been observed between a connection to nature and enhanced emotional well-being, stress reduction, improved self-efficacy, and a superior ability to navigate challenging emotions in young people (Crandon et al., 2022). The concept of biophilia aligns with these findings, emphasizing the importance of early childhood environmental education (Wilson, 2020). This connection can follow all the way into adulthood, potentially fostering environmentally friendly attitudes and behaviors (Nche, Achunike & Okoli, 2019; Hahn, 2021).

Nature pedagogies can play a vital role in reconnecting children with the natural world. Through direct, hands-on experiences in nature's diverse elements – trees, logs, dirt, water – children develop vital life skills such as persistence, courage, and self-regulation. These experiences in nature lay the foundation for children to create meaning, develop a sense of place, and build empowering connections with the natural world (Baker, Green, and Falecki, 2017). Nature exposure also comes with a number of co-benefits for children, including improvements in cognitive function, physical health, and social cohesion (Gordon and Kuo, 2021).

Despite the rapid proliferation of nature preschools, forest kindergartens, and garden schools, particularly in the United States and Canada (Nxumalo, 2018), a number of concerns remain. Nxumalo critiques these initiatives for perpetuating human-centric and extractive relationships with nature, inadvertently reinforcing the environmental crisis they aim to alleviate. The essential focus, Nxumalo argues, should be on climate change education rooted in the real ecological contexts of children's everyday

lives, spanning beyond the idyllic and privileged environments of forest schools.

Deep dive: Post-humanism

Contemporary discourse in Early Childhood Education (ECE) is increasingly acknowledging the significance of a post-human perspective, wherein humans are perceived as intertwined with the natural world (Wals, 2017). This emergent view is in contrast with anthropocentrism, which values the non-human world only for its utility to human interests (Eriksen, 2013), and challenges the concept of human exceptionalism that posits humans as unique bearers of agency (Wals, 2017). This perspective also encourages a reevaluation of educational focuses in ECE. Van Vuuren (2023) emphasizes the importance of fostering a connection between children and nature to cultivate a balanced relationship with the natural world, rather than perpetuating environmentally detrimental practices. This approach in ECE disagrees with the concept of "nature deficit disorder," a term proposed by Louv (2005), which describes the adverse effects on individuals and communities arising from a disconnection with nature, predominantly due to increased technological engagement and a risk-averse society (Somerville & Williams, 2015).

There is a growing call for the incorporation of post-human frameworks in educational research and practice, which advocates for transcending the nature/culture binary in early childhood education research (Somerville & Williams, 2015). The essence is to instill an appreciation and understanding of nature in children, redefining humans as part of the multispecies world, and promoting a collaborative effort towards the restoration and preservation of the planet (Wals, 2017; van Vuuren, 2023). This reframing in ECE is crucial for nurturing environmentally responsible individuals, mitigating the perpetuation of harmful anthropocentric attitudes and practices (Eriksen, 2013; Somerville & Williams, 2015).

Deep dive: Animals, plants, and insects

Non-human animals play a significant yet underexplored role in the context of Environmental Education (EE), fostering children's empathy, autonomy, and sense of stewardship. Interactions with both domesticated and wild animals alleviate various types of emotional distress and cultivate a broader sense of care towards all living beings. These interactions help children to learn that animals and other living creatures have intrinsic value beyond utilitarian views (Born, 2018). Born advocates for diverse educational strategies involving animals to enhance children's ethical, justice, and care perspectives towards them, emphasizing the importance of physical connections with living beings as a powerful educational tool.

Further, Jones & MacLeod (2022) argue that the prevailing emphasis on human-animal relationships in environmental understanding and children's literature overlooks the significant role of plants, particularly in the current climate crisis context. The authors observe a marked increase in children's climate fiction, attributed to the "Greta Thunberg effect," yet argue that these works disproportionately focus on animal and human consequences of climate change while neglecting plant life. They emphasize the necessity of acknowledging plant agency or "plantiness" (Head et al., 2014) and advocate for the incorporation of plants in literary fiction to promote pro-environmental behavior and ecological stewardship among young readers. The prevailing settings in climate fiction, primarily urban ones, further marginalize plant life, proving the need for a rebalanced narrative emphasis on botanical elements.

Elizabeth & Russell (2020) further broaden this discourse to include insects, confronting widespread negative perceptions and the anthropocentric nature of human-insect encounters. The authors highlight the intrinsic value of insects and their potential role in children's lives, emphasizing the importance of portraying insects authentically and positively in children's literature and educational settings to foster ethical and caring relationships with these often overlooked creatures. This approach seeks to challenge and deconstruct the entrenched human/nature divide, advocating for a more inclusive and integrated perspective on the myriad life forms cohabiting the earth.

CHAPTER 5: AGENCY AND HUMAN FLOURISHING

Introduction

Climate change causes distress among children and youth due to their limited power to effect change and their anticipated exposure to climate impacts in the future. There is a need for educational environments that empower young people by fostering a sense of agency and involvement in climate action. With a significant percentage of pediatric psychiatrists counseling children who are worried about climate change, the literature calls for home and school conversations to support positive climate action outcomes.

Educational strategies should be participatory, leveraging children's capabilities as learners and problem-solvers. This helps them develop resilience and hope, which are vital for tackling climate change. The literature suggests incrementally increasing children's involvement in environmental activism, allowing for genuine participation while ensuring they are not overwhelmed by the weight of global problems.

Early childhood is highlighted as a critical period for instilling a sense of ecological responsibility, and educational institutions should promote both individual and community well-being. Despite the push for child involvement, the literature notes the ongoing need for adult guidance to maintain a healthy balance of responsibility.

International examples of child participation in environmental policy, such as youth parliaments, show their big potential impact. Case studies from around the world demonstrate the success of practical, child-led sustainability projects and the importance of place-based education to engage children in meaningful activities.

There is an urgent need to offer children the tools to convert anxiety into action and to understand their role in a sustainable future. The literature calls for a shift from adult-centric to more child-inclusive practices in environmental sustainability to foster a global citizenship mindset from a young age.

Conclusion

1. Develop supportive educational

environments: Create educational settings that provide supportive and empowering experiences for children and youth to learn about climate change. This includes integrating conversations about climate impacts into school curricula and building environments where young people feel they can discuss their concerns and take constructive action.

2. Promote agency and efficacy: Encourage actions that allow children to experience a sense of control and effectiveness in tackling climate issues. This can be done by involving them in age-appropriate environmental activism and decision-making, teaching them about positive outcomes of environmental stewardship, and guiding them to see the tangible results of their actions.

3. Balance participation with guidance: While it is crucial to involve children in environmental decision-making, it's equally important to provide adult guidance. Children should be active participants without being burdened with responsibilities that exceed their developmental stage. Adults should facilitate, guide, and support – rather than dictate – children's environmental involvement.

4. Implement participatory action research: Engage children in participatory action research projects that address real-world environmental problems. This approach should respect children as competent contributors to sustainability, allowing them to understand and take action on issues relevant to them and their communities.

Escalating climate impacts, paired with limited political agency, has left many children and youth feeling helpless, anxious, and distressed about the future (Martin et al., 2022). This despair and frustration is exacerbated by a lack of understanding of climate change, limited control over everyday decisions, and exposure to the climate impacts likely to unfold within their lifetime (Hayes, Barocas & Levy, n.d.). Various sources highlight a need for supportive and empowering educational environments (Sanson, Van Hoorn & Burke, 2019; Baker, Clayton & Bragg, 2020). Contemporary climate discourses about the impact of climate change on children's and youth's mental health underscores the importance of promoting a sense of agency in children and its efficacy among this demographic (Martin et al., 2022; Hayes, Barocas & Levy, n.d.). In England, 57% of pediatric psychiatrists have reported counseling children distressed about the climate crisis, an indication of the burgeoning mental health issues caused by environmental concerns (Martin et al., 2022).

There is a need to foster a sense of agency and efficacy in children to counter feelings of powerlessness and hopelessness (Sanson, Van Hoorn & Burke, 2019). Promoting conversations within homes and schools, and creating experiences that enhance children's perception of agency, are crucial (Baker, Clayton & Bragg, 2020). This approach should highlight attainable positive outcomes of climate action and support children in envisioning a tangible and hopeful future.

Efforts must be made to meet children "where they are" by providing age-appropriate, interactive, and engaging opportunities to make a difference (Hayes, Barocas & Levy, n.d.). This approach helps build their sense of self and collective efficacy, resilience, and hope – all crucial components for mitigating climate change impacts. This can be achieved through embedding children in cultures that gradually increase their responsibilities, helping them to identify environmental problems, devise solutions, and engage in environmental activism at an accessible level (Sobel, 2007).

Children should be recognized as capable and competent learners and active participants in

addressing environmental issues (Elliott, 2010; Nche, Achunike & Okoli, 2019). Schools and educators should facilitate problem-solving, critical thinking, and participatory decision-making, enabling children to be part of the process of education for sustainability. This approach nurtures long-term pro-environmental behavior, leading to responsible environmental action.

Despite the increasing emphasis on youth involvement, adult guidance is still essential (Wolff, Skarstein & Skarstein, 2020). It's imperative that the adult community retains an authoritative role in guiding and supporting children while respecting their rights, ensuring their involvement does not translate to undue responsibility. A balance is needed to ensure that while children are active participants, they are not burdened with decisions beyond their comprehension.

Participatory, interdisciplinary, creative, and affect-driven approaches to climate change education have proven most effective in building self-efficacy, collective efficacy, and agency among children (Sanson, Padilla & Van Hoorn, 2022). Highlighting values such as empathy, social justice, and love of nature, coupled with improving skills such as adaptability, creativity, social interaction, and nonviolent conflict-resolution, further empower children to effectively confront climate-related challenges.

Deep dive: Human flourishing

The UNESCO 2022 International Science and Evidence-based Education Assessment (ISEEA), highlighted by Ellyatt (2022), advocates for a multi-scalar promotion of flourishing, rooted in a relational ecological self, underscoring the importance of vulnerability and authenticity in meaningful human interactions and experience. This relational model is echoed in environmental and sustainability education (EfS), which emphasizes the intertwined nature of human flourishing and ecological health (Wilson, 2020). EfS encourages children to actively participate, realizing their collective power to induce change and the importance of extending care beyond individual concerns, laying the foundation for social justice.

Sobel (2007) suggests a school-based framework for promoting environmental responsibility and agency, starting with small, manageable issues. This incremental approach nurtures children's sense of agency, which is integral for long-term responsible environmental behavior. Elliott (2010) echoes this by stressing the role of early childhood practitioners to provide environments conducive to problem-solving and critical thinking regarding environmental issues.

The significance of early childhood as the paramount period for growth and development is reinforced by neuroscientific research (Baker, Green & Falecki, 2017). Even in early childhood education and care services, the perspective of young children, crucial for their immediate and future well-being, should not be overlooked. Using positive psychology approaches has the potential to ensure the flourishing of individuals and communities, and there is the need for a concerted effort towards nurturing ecological consciousness and responsibility from a young age.

Despite progress in this area, the role of adult guidance is consistently emphasized to ensure that the balance of participation and responsibility is preserved (Wolff, Skarstein & Skarstein, 2020). This approach should ensure that while children actively contribute, they do not bear the responsibility of decisions beyond their understanding, therefore safeguarding their mental and emotional well-being.

Deep dive: Active participation

The importance of engaging children in environmental actions and climate change mitigation efforts is highlighted throughout the literature. The inclusion of children in climate change policy decisions is essential, calling for mechanisms that allow for meaningful and sustained participation (Strazdins & Skeat, 2011). International models such as youth parliaments and local government activities demonstrate the capacity of even six-year-old children to address specific environmental problems (Strazdins & Skeat, 2011; Koomen & Herrmann, 2018). Strazdins & Skeat (2011) argue for effective mechanisms allowing children's voices and needs to influence climate-related decisions, alluding to the UNCRC, which emphasizes children's right to participate in matters affecting them, and citing

various international participatory models such as youth parliaments and local government activities. Similarly, children's involvement in meaningful environmental actions has been highlighted as a way for them to manage climate-related anxiety and enhance resilience (Godden et al., 2021).

Tsevreni, Tikka & Christidou (2022) highlight a case study of a nursery school in Greece which engages preschool children in participatory action research, demonstrating their capability as equal participants and problem solvers in environmental issues. The study underlines the importance of shifting from top-down initiatives to involving children in research and action on actual environmental issues. Ritchie & Phillips (2021) reference a U.S. study by Trott (2020) describing empowering pedagogical spaces generating hands-on, critical, and creative child-led local sustainability projects, showcasing the importance of participatory and practical environmental education. There is also a need for educational responses to be not just participatory but also place-based, facilitating children and youth to practice agency and active participation in their educational choices (Field, 2017). The adoption of community as curriculum into schools and connected learning approach encourages interest-driven learning and community problem-solving (Field, 2017).

Efforts to convert anxiety into constructive action can empower children's confidence in addressing climate issues (Rasmussen, 2023; Sheldon-Dean, 2022). Active involvement not only improves individual and collective competence but also counters the negative psychological impacts of climate awareness (Trott, 2021). In practice, this could look like supporting low-carbon independent mobility, with Wild & Woodward (2021) emphasizing the role of involving children in creating safe conditions for activities like walking and cycling, which contribute further to their physical and mental well-being while promoting environmental sustainability.

Tuukkanen & Pekkarinen (2022) emphasize the necessity of recognizing children's own experiences and concerns about their environment, as their perception of their environment is closely linked

to their wellbeing. They argue that children's environmental concern is often manifested in their willingness to undertake smaller tasks like recycling, highlighting their awareness of climate change impacts and their readiness to contribute to sustainability. In this context, Duhn, Bachmann & Harris (2010) present New Zealand's Collectively Kids program, which focuses on global citizenship by caring for self and others within their community, thereby engaging in an ongoing process of change committed to local and global transformation.

Children's participation in early childhood education should be democratic, extending beyond individual initiative to the creation of the classroom as a community, promoting and fostering global citizenship from an early age (Luff, 2018). Rousell & Cutter-Mackenzie-Knowles (2019) criticize the limited opportunities currently available for children and young people to voice their understandings, concerns, and ideas about climate change within their local environments and communities, which poses a crucial gap in environmental education and advocacy efforts.

Hägglund & Samuelsson (2009) discuss the essential role of sustainability in children's education for sustainable development, emphasizing the need for acquired knowledge to be enduring, making

children aware of the changing nature of time and place. Challenging conventional civic educational efforts, Swalwell & Payne (2019) propose project- or inquiry-based learning beginning with children's curiosities and capabilities, which is foundational to equipping them with the skills and knowledge to effectively disrupt oppression.

CHAPTER 6: THE ROLE OF PARENTS AND CARETAKERS

Introduction

To build resilience and promote climate action, parents and children need to be educated about environmental issues. It's crucial for parents to learn effective climate communication, balancing honesty with maintaining a hopeful outlook for their kids. Through the "passthrough effect," which is when children grow concerned about climate issues and take environmental action, they prompt their parents to feel more empowered and also take action (Hayes, Barocas & Levy, n.d.).

Research suggests that family dynamics play a big role in how children understand and react to climate change. Parents' own emotions around climate affect their children, making it vital for them to manage these feelings and have open discussions at home. Engaging children with nature early on is also key to developing appreciation for the environment and pro-environmental behavior.

Intergenerational learning is a powerful tool, and educational institutions should focus on empowering families to face climate change together while providing emotional support and encouraging proactive engagement.

Conclusion

1. Provide a safe space for climate conversations:

Parents should create safe spaces for their children to talk about climate change where they can freely express their concerns and feelings. This open dialogue can help children feel understood and valued by adults. It's important for these discussions to be age-appropriate and supportive, ensuring children are informed but not overwhelmed by fear or anxiety.

2. Model positive engagement: Adults should demonstrate positive attitudes towards nature by showing their interest, knowledge, and pro-environmental actions. This modeling can support a child's appreciation for the environment. Eco-parenting strategies suggest incorporating authoritative yet supportive parenting styles to teach children about sustainable living.

3. Promote intergenerational learning:

Encourage activities where children can lead the way in tackling environmental issues, helping their parents and caregivers to learn from them and feel more empowered to take action themselves. This can reinforce climate concern and proactive behavior within the entire family unit.

Building parents' and caregivers' knowledge and skills on the types of parenting styles and relationships that serve as a protective factor for young people will be essential in a climate-changed world. Parents can serve as a source of information and capacity building for young people to learn and adopt key skills and behaviors, such as emotion regulation and coping strategies, which in turn serve as protective factors at the individual level (Ma, Moore & Cleary, 2022).

A study in Finland found that parents experience feelings of sadness, hopelessness, and anxiety about the futures of their children in the face of climate change (Gaziulusoy, 2020). Many find it difficult to balance giving information suitable for the age of their children and not infusing fear or anxiety in them. The larger systems that parents are embedded in create limitations to the extent to which they can act, causing feelings of insufficiency and disempowerment (ibid).

Empowering children in the context of climate change indirectly means empowering the whole family. When children grow concerned about climate issues and take environmental action, they prompt their parents to feel more empowered and take action, known as the "passthrough effect" (Hayes, Barocas & Levy, n.d.). This highlights the importance of children's role in motivating climate concern and action within families.

Educating children in isolation from adults exacerbates their fears as they perceive inaction around them (Strazdins & Skea, 2011). Parents are more likely than other adults to be receptive to messages about climate change, particularly when aimed at behavior change. Sanson (2018) stresses the importance of communication and enabling children to express their ideas, engage in meaningful mitigation activities, and explore their concerns about climate change.

Adults play a crucial role as models through communicating their interest, knowledge, and appreciation of nature, which is essential for developing positive attitudes towards nature and nature conservation (Wolff, Skarstein & Skarstein, 2020). Eco-parenting, grounded in an authoritative parenting model, can be effective in building mitigation and adaptation capacities in children (Nche, Achunike & Okoli, 2019). Recent research highlights the significant role of intergenerational learning in promoting climate concern among parents (Hahn, 2021). This is echoed by Pinto & Grove-White (2020), who note that child-to-parent intergenerational learning can significantly change attitudes toward climate change.

Recommendations for parents include providing opportunities to discuss climate change and other environmental concerns, and enabling children to identify and express their feelings about these issues (Hayes, Barocas & Levy, n.d.). This approach allows children to feel more understood and appreciated by the adults in their lives (Rasmussen, 2023). Exposing children to nature from a young age helps in comprehending the impact humans have on it, contributing to a sustainable future mindset (Jansen van Vuuren, 2023). Early exposure helps to develop an understanding of nature, which is essential before the window of opportunity passes (Cooper, 2009, cited in Jansen van Vuuren, 2023).

Addressing children's emotions is paramount, and resources that support children's environmental

learning in a way that fosters emotional well-being and promotes hopefulness are thought to be beneficial (Baker, Clayton & Bragg, 2020). Parents and teachers should also manage their own anxiety as a precondition for facilitating healthy conversations with children (Baker, Clayton & Bragg, 2020).

EVIDENCE GAPS

The existing body of research shows significant gaps in understanding how specific age groups, particularly in early and middle childhood, are affected by eco-anxiety or engagement with climate change. This could be attributed to varying definitions of children and youth or the nascent stage of this research field.

Moreover, there is a dearth of research regarding the developmental timing of climate change-related stressors and their impact on developmental outcomes, with practically no longitudinal research⁹ conducted in this area. There are also slight inconsistencies regarding findings on levels of climate concern over time (from early childhood to adulthood). These fluctuations might also vary across countries and geographical regions, and it is not clear whether all variables influencing climate concern over time have been sufficiently established in the literature.

Much of the existing research is Western-centric, especially concerning climate anxiety, and primarily focuses on indirect impacts or awareness in WEIRD (Western, Educated, Industrialized, Rich and Democratic) countries. A large number of sources, when focusing on a specific country, were based in Australia, the United States, New Zealand, and Europe (particularly Scandinavian countries).

The field lacks intervention studies, with a significant portion of the work being theoretical. Baker et al. (2020) stress the value of diverse study designs for younger children, such as observations, use of adult informants, and arts-based approaches, highlighting

9. Longitudinal research: research within the same demographics are repeated over time to better understand how variables may impact the outcomes over a period of time

the potential of art as an age-appropriate medium to engage young children in climate change action. The field would benefit from using a more diverse array of research methods to produce more multifaceted evidence, which would aid in examining the wealth of theoretical work available.

Despite the substantial number of studies conducted with adolescent populations, a noticeable lack is present in research involving younger children, potentially due to safeguarding concerns. This discrepancy raises questions about the implications of fluctuations in environmental concern during adolescence and highlights the need to focus on early childhood, which is recognized throughout the literature for its significant impact on nature connection, pro-environmental behavior, and climate concern.

Beyond climate change, the research gaps extend to understanding the effects of associated issues such as nature loss and plastic pollution on children's mental health, as highlighted by Clemens, von Hirschhausen, & Fegert (2020).

REVIEW CONCLUSION

The distress children experience around climate change is a complex phenomenon encompassing a range of emotional and psychological experiences. Climate distress is particularly acute among Indigenous youth and is exacerbated by direct experiences with severe weather events. Children's and youth's emotional responses are shaped by media, education, and cultural narratives, and can either motivate environmental action or contribute to a sense of helplessness. Despite some progress, significant gaps remain in the literature, particularly concerning very young children and the long-term effects of climate distress and how they evolve across developmental stages.

The role of educators and parents in addressing this challenge is critical.

Educators see these roles as especially critical as children's understanding and emotions about climate change evolve with age. Educational strategies that balance the need for safety with engagement in nature and focus on fostering a sense of control and community can mitigate negative impacts on mental health and well-being. There is a need for critical engagement with children's climate change literature, as it offers both opportunities for engagement as well as risks of oversimplification.

As we have entered the Anthropocene, education should be reimagined in a way that emphasizes sustainability and ecological interconnectedness. This involves integrating comprehensive sustainability education into curricula, fostering political engagement and resilience, and promoting direct experiences with nature. There is also a need to decenter human narratives in nature education and to promote a holistic understanding of the environment, which includes non-human animals and plants.

Research points to the powerful role of intergenerational learning and family dynamics in shaping children's responses to climate change. By supporting children to transform anxiety into action and recognize their potential as agents of change, we can cultivate a generation of informed, empathetic, and environmentally responsible citizens.

The focus on empowering children should be accompanied by adult guidance to ensure a balanced approach to environmental stewardship and to extend the scope of sustainability education beyond mere appreciation of nature towards active, informed participation in addressing the climate crisis.

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