

Cultural and Science Album

Tredoux Willemse, John Beegle, Ivan Cheng



Introduction to the Cultural Studies Album for the Montessori Early Childhood Classroom (Ages 3-6)

In alignment with AMS (American Montessori Society) standards, this Cultural Studies Album is designed to support the holistic development of children aged 3 to 6 through purposeful, hands-on exploration of geography, history, life sciences, physical sciences, art, and music. Dr. Maria Montessori emphasized that the young child possesses an innate curiosity about the world, and the cultural curriculum serves as a bridge between their immediate environment and the broader universe.

This album adheres to the Montessori principles of concrete learning, sequential presentation, and cosmic education, ensuring that each lesson fosters independence, observation, and reverence for life. The activities are structured to follow the child's natural development, progressing from simple to complex and from concrete to abstract. Lessons integrate sensorial exploration, nomenclature, classification, and experiential discovery, all while nurturing the child's sense of wonder and global citizenship.

The materials and presentations within this album have been carefully curated to meet AMS pedagogical standards, ensuring authenticity, clarity, and developmental appropriateness. Each lesson is designed to be presented in a prepared environment where children engage with didactic materials, stories, experiments, and artistic expression to construct their understanding of cultural concepts.

By offering a structured yet flexible approach, this album supports the guide in cultivating a classroom where children develop critical thinking, respect for diversity, and an appreciation for the interconnectedness of all living things.

This album serves as both a foundational guide for Montessori educators and a tribute to the child's limitless potential as an active participant in their own learning.



Geography – Introduction

Geography in the Montessori classroom lays the foundation for understanding the world, both physically and culturally. It is one of the most important components of the Montessori cultural curriculum, as it helps children connect their personal lives to the wider world. The Montessori approach introduces geography concretely, then builds toward abstraction. Children begin by identifying the differences between land and water, using land and water form trays, and then expand their knowledge with globes, puzzle maps, and cultural artifacts.

The study of geography includes:

- **Physical Geography:** landforms, water bodies, continents, oceans, climate zones, and biomes.
- **Political Geography:** countries, borders, flags, landmarks, and people.
- **Cultural Geography:** traditions, language, food, clothing, and celebrations of different peoples around the world.

Lessons are designed to be sensorial and engaging, with movement, music, storytelling, and hands-on work. Through this, the child develops a sense of identity, belonging, and respect for human and environmental diversity. The geography curriculum helps children become responsible global citizens who care for the Earth and appreciate the richness of the world's cultures.

GEOGRAPHY

1. Introduction to the Globe

Age Group: 3–6 years

Materials:

- Sandpaper globe (continents as smooth; water as sandpaper or vice versa)
- Table or mat

Presentation:

1. Invite the child and bring the sandpaper globe to a table or mat.
2. Say: "This is our Earth. It is round like a ball."
3. Gently spin the globe. Let the child feel it.
4. Say: "The rough part is water. The smooth part is land."
5. Invite the child to feel the surface.
6. Ask: "Which part do you feel now?"
7. Repeat several times, allowing the child to explore.

Control of Error:

Tactile difference between sandpaper and smooth surface.

Points of Interest:

Feeling the texture of land and water. Spinning the globe.

Purpose:

- *Direct:* Awareness of the Earth as a sphere with land and water.
- *Indirect:* Preparation for land and water forms, continent studies.

Extensions:

- Match pictures of land and water.
- Create a land/water collage.

Related Activities:

- Storytime: "Me on the Map"
- Observation walk to identify land and water in real life.



2. Introduction to the Continent Globe

Age Group: 3–6 years

Materials:

- Colored continent globe (each continent a different color)
- Table or mat

Presentation:

1. Invite the child and bring the continent globe.
2. Say: "This is also Earth. It is round too."
3. Point to a continent: "This is land. This land is called a continent."
4. Spin the globe slowly: "The Earth has many continents."
5. Name and point to each one (keep it brief): "This is Africa. This is Asia..."
6. Invite the child to point and repeat.

Control of Error:

Colors of continents and labels (if present).

Points of Interest:

Brightly colored continents, globe spinning.

Purpose:

- *Direct:* Introduction to continents as major land masses.
- *Indirect:* Preparation for puzzle maps, cultural studies.

Extensions:

- Match globe to continent puzzle map.
- Create playdough models of continents.

Related Activities:

- Song: "Continents Song"
- Picture cards of children around the world.





3. Land and Water Forms – Island and Lake

Age Group: 3–6 years

Materials:

- Land and water trays (island and lake)
- Jug of water
- Sponge or towel

Presentation:

1. Invite the child and bring the materials to a table.
2. Fill the tray slowly with water.
3. Say: "This is an island. It is land with water all around."
4. Empty tray. Refill the other tray.
5. Say: "This is a lake. It is water with land all around."
6. Let the child explore and name each.

Control of Error:

Shape of land and water trays clearly shows the form.

Points of Interest:

Pouring water, watching it surround land or be surrounded by land.

Purpose:

- *Direct:* Understand the concept of island and lake.
- *Indirect:* Preparation for more complex land/water forms.

Extensions:

- Draw or paint an island and lake.
- Use clay to make models.

Related Activities:

- Books about islands or lakes
- Matching photos of real-life examples







4. Land and Water Forms – Peninsula and Gulf

Age Group: 3–6 years

Materials:

- Land and water trays: peninsula and gulf
- Jug of water
- Sponge or towel

Presentation:

1. Invite the child to the table and bring materials.
2. Fill the peninsula tray with water.
3. Say: "This is a peninsula. It is land almost surrounded by water."
4. Trace the land with your finger.
5. Empty the tray and refill the gulf tray.
6. Say: "This is a gulf. It is water surrounded by land on three sides."
7. Let the child explore.

Control of Error:

The shapes clearly show the relationship between land and water.

Points of Interest:

Watching how the water surrounds or fits into the land.

Purpose:

- *Direct:* Understand the concepts of peninsula and gulf.
- *Indirect:* Preparation for identifying these forms in maps and real life.

Extensions:

- Build peninsulas and gulfs with sand and water outside.
- Draw or model with clay.

Related Activities:

- Look at satellite images or photos of real peninsulas and gulfs.





5. Land and Water Forms – Isthmus and Strait

Age Group: 3–6 years

Materials:

- Land and water trays: isthmus and strait
- Jug of water
- Sponge or towel

Presentation:

1. Fill the isthmus tray with water.
2. Say: "This is an isthmus. It is a narrow strip of land connecting two larger areas of land."
3. Trace it with your finger.
4. Empty and fill the strait tray.
5. Say: "This is a strait. It is a narrow body of water connecting two larger bodies of water."
6. Allow exploration.

Control of Error:

Clearly defined shapes in trays.

Points of Interest:

The contrast between narrow land and narrow water.

Purpose:

- *Direct:* Understand the concepts of isthmus and strait.
- *Indirect:* Spatial and geographical awareness.

Extensions:

- Clay or sandbox models.
- Use yarn or strings to represent connections on maps.

Related Activities:

- Find the Isthmus of Panama or Strait of Gibraltar on a map.





6. Land and Water Forms – Cape and Bay

Age Group: 3–6 years

Materials:

- Land and water trays: cape and bay
- Jug of water
- Sponge or towel

Presentation:

1. Fill the cape tray.
2. Say: "This is a cape. It is land that sticks out into the water."
3. Point and trace the projection.
4. Empty and fill the bay tray.
5. Say: "This is a bay. It is water that comes into the land."
6. Let the child compare both.

Control of Error:

The visual shapes demonstrate the difference.

Points of Interest:

The way the land curves out versus the water curving in.

Purpose:

- *Direct:* Distinguish between a cape and a bay.
- *Indirect:* Foundation for more advanced map study.

Extensions:

- Look at real examples: Cape Cod, San Francisco Bay.
- Use food (e.g., cookie dough or clay) to model forms.

Related Activities:

- Globe or map search for capes and bays.
- Art project: Paint or sculpt the forms.

7. Land and Water Forms – Archipelago and System of Lakes

Age Group: 3–6 years

Materials:

- Land and water trays: archipelago and system of lakes
- Jug of water
- Sponge or towel

Presentation:

1. Fill the archipelago tray with water.
2. Say: "This is an archipelago. It is a group of islands."
3. Let the child count and explore the islands.
4. Fill the system of lakes tray.
5. Say: "This is a system of lakes. It is a group of lakes."

Control of Error:

Individual islands and lakes are visible and separate.

Points of Interest:

Countable features, visual grouping.

Purpose:

- *Direct:* Understand what an archipelago and a system of lakes are.
- *Indirect:* Classification, observation, comparison.

Extensions:

- Identify island groups and lake systems on a map.
- Build an archipelago in a sandbox or tub.

Related Activities:

- Photos of places like Hawaii (archipelago) or the Great Lakes.

8. Introduction to the Puzzle Map of the Continents

Age Group: 3–6 years

Materials:

- Puzzle map of the continents
- Control map (printed map for reference)

Presentation:

1. Invite the child to the map cabinet.
2. Say: "This is a puzzle of the Earth's continents."
3. Carefully remove each piece and name it (e.g., "This is Africa.").
4. Lay the pieces on a mat.

5. Say: "These are the continents of our world."
6. Replace each piece in the frame, naming as you go.
7. Invite the child to try.

Control of Error:

The control map and the puzzle frame help guide placement.

Points of Interest:

The shapes of the continents, fitting the pieces like a puzzle.

Purpose:

- *Direct:* Familiarity with the names and shapes of the continents.
- *Indirect:* Preparation for individual continent studies.

Extensions:

- Outline continents on paper and color them.
- Make continent booklets.

Related Activities:

- Sing the "Continents Song"
- Match 3-part cards of the continents

9. North America Continent Puzzle Map

Age Group: 3–6 years

Materials:

- Puzzle map of North America
- Control map
- Picture cards of landscapes, animals, people, monuments of North America

Presentation:

1. Present the puzzle map of North America.
2. Remove the pieces one by one, naming countries or regions simply (e.g., “This is Canada,” “This is the United States”).
3. Lay pieces on a mat and reconstruct.
4. Introduce cards showing cultural/geographic elements: e.g., Grand Canyon, maple leaf, bison, Statue of Liberty.

Control of Error:

Puzzle frame and control map.

Points of Interest:

Discovering images related to real places and people.

Purpose:

- *Direct:* Learn the layout of North America.
- *Indirect:* Introduction to geographic and cultural diversity.

Extensions:

- Make a “North America” booklet with pictures.
- Match landmarks and animals to the countries.

Related Activities:

- Learn about native animals and habitats of North America.
- Taste foods or listen to music from the region.

10. South America Continent Puzzle Map

Age Group: 3–6 years

Materials:

- Puzzle map of South America
- Control map
- Cards: Andes Mountains, Amazon Rainforest, llama, rainforest tribes, Machu Picchu

Presentation:

1. Present the South America puzzle map.
2. Remove and name pieces.

3. Reconstruct the puzzle.
4. Show picture cards and introduce facts: "The Amazon is the largest rainforest."

Control of Error:

Puzzle frame and control map.

Points of Interest:

Animals like toucans and llamas, vibrant jungle imagery.

Purpose:

- *Direct*: Identify countries/regions of South America.
- *Indirect*: Exposure to ecological and cultural richness.

Extensions:

- Make a rainforest diorama.
- Paint toucans, parrots, or rainforest trees.

Related Activities:

- Listen to South American music (e.g., pan flute).
- Prepare a simple recipe (e.g., arepas or plantains).

11. Africa Continent Puzzle Map

Age Group: 3–6 years

Materials:

- Puzzle map of Africa
- Control map
- Picture cards of African animals, people, traditional dress, music, landscapes (e.g., Sahara, savanna, pyramids)

Presentation:

1. Invite the child to the Africa puzzle map.
2. Say: "This is Africa. It is one of the continents."
3. Carefully remove each piece and name countries or regions (briefly, as appropriate).
4. Lay out pieces and reconstruct the puzzle.
5. Show pictures of things from Africa: lions, elephants, the Sahara Desert, people in traditional clothing.

Control of Error:

Control map and puzzle frame.

Points of Interest:

Seeing animals they recognize; interesting traditional clothing and music.

Purpose:

- *Direct:* Learn the shape and features of Africa.
- *Indirect:* Cultural awareness and appreciation for biodiversity.

Extensions:

- Animal matching: lions, zebras, elephants, giraffes.
- African rhythm music and dance exploration.

Related Activities:

- Craft African necklaces or masks.
- Learn simple greetings in Swahili or other African languages.





12. Europe Continent Puzzle Map

Age Group: 3–6 years

Materials:

- Puzzle map of Europe
- Control map
- Picture cards: Eiffel Tower, Big Ben, gondolas, traditional foods, musicians, snowy mountains

Presentation:

1. Invite the child to explore the Europe puzzle map.
2. Say: "This is Europe. It's a continent made of many countries."
3. Remove puzzle pieces, name familiar countries like France, Italy, etc.
4. Rebuild the puzzle together.
5. Introduce cultural elements with pictures: "This is the Eiffel Tower in France," "People in Italy ride in boats called gondolas."

Control of Error:

Control map and puzzle frame.

Points of Interest:

Landmarks, different foods, traditional festivals.

Purpose:

- *Direct:* Learn the structure of Europe.
- *Indirect:* Connection to world culture and geography.

Extensions:

- Create a mini "passport" with stamps from different European countries.
- Bake simple European bread (like soft pretzels or focaccia).

Related Activities:

- Listen to folk music or classical composers.
- Look at art styles from different countries (Van Gogh, Michelangelo, etc.)





13. Asia Continent Puzzle Map

Age Group: 3–6 years

Materials:

- Puzzle map of Asia
- Control map
- Picture cards: Mount Everest, cherry blossoms, tigers, rice paddies, traditional dress, temples, camels, pandas

Presentation:

1. Introduce the map: "This is Asia. It is the largest continent."
2. Remove the pieces carefully, naming notable countries or regions.
3. Rebuild the puzzle together.
4. Show picture cards: "This is a panda from China," "This is Mount Everest, the tallest mountain in the world."

Control of Error:

Control map and puzzle frame.

Points of Interest:

Iconic imagery like pandas, dragons, temples.

Purpose:

- *Direct:* Learn the layout of Asia.
- *Indirect:* Exposure to diverse climates, cultures, and languages.

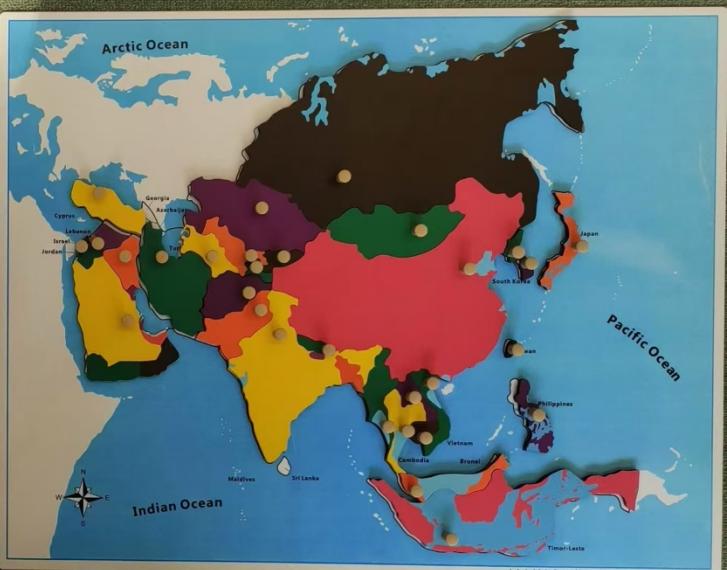
Extensions:

- Create a mini Asian landscape painting.
- Practice writing a few Asian characters (e.g., Chinese or Japanese).

Related Activities:

- Prepare simple Asian snacks (e.g., rice, noodles).
- Explore music from different regions of Asia.





14. Australia Continent Puzzle Map

Age Group: 3–6 years

Materials:

- Puzzle map of Australia
- Control map
- Picture cards: kangaroo, koala, Great Barrier Reef, Aboriginal art, Ayers Rock (Uluru), didgeridoo

Presentation:

1. Say: "This is Australia. It's also called Oceania and includes many islands."
2. Remove the puzzle pieces and name them: "This is the main part of Australia. These are surrounding islands."
3. Rebuild the puzzle.
4. Introduce cards: "This is a kangaroo, found only in Australia," "This is Aboriginal ar

Control of Error:

Puzzle frame and control map.

Points of Interest:

Unusual animals and colorful art.

Purpose:

- *Direct:* Learn the geography of Australia and Oceania.
- *Indirect:* Build awareness of indigenous cultures and island geography.

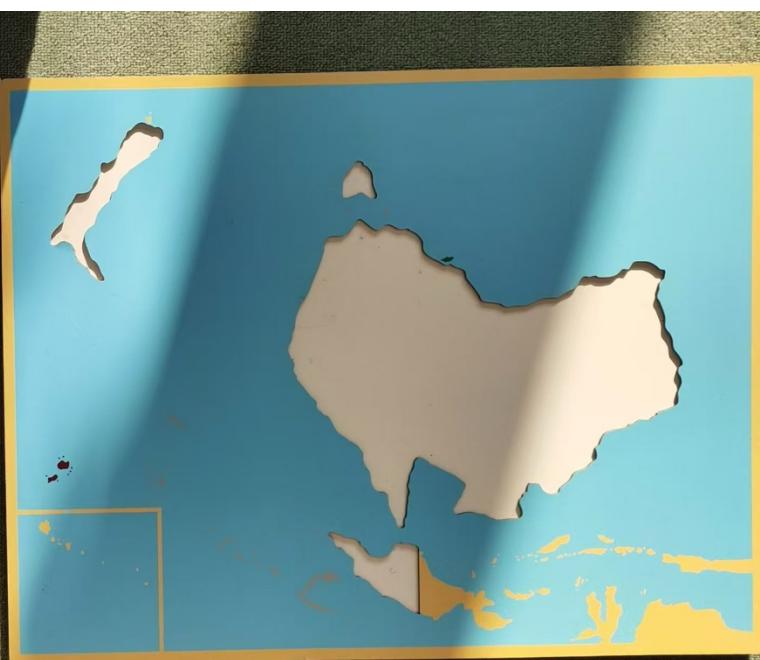
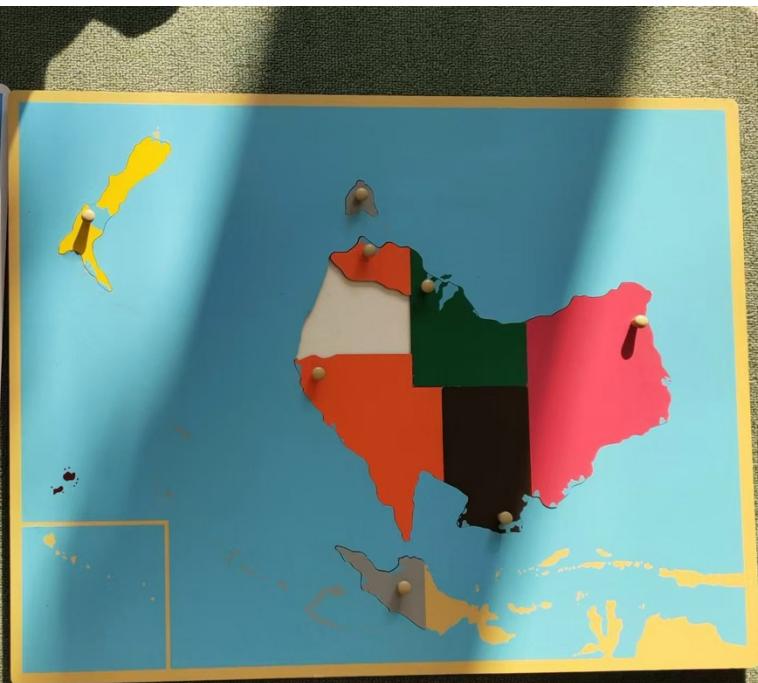
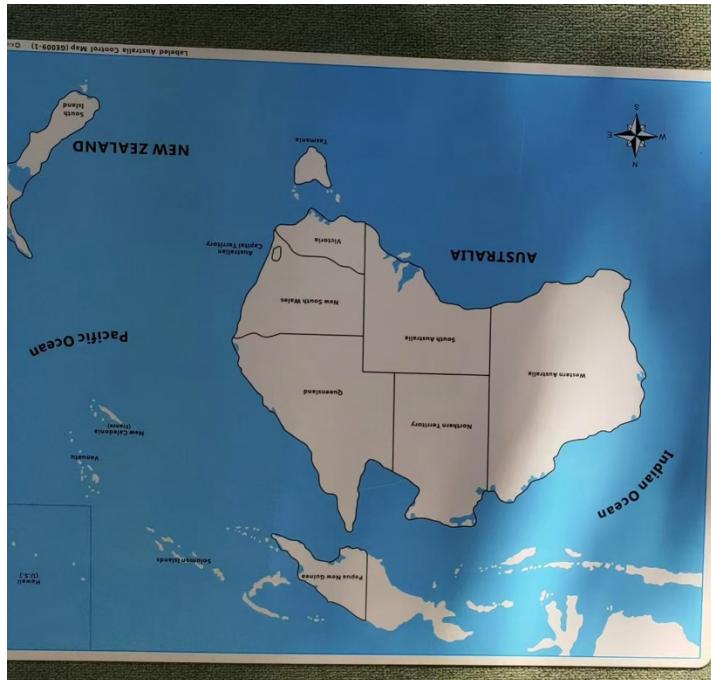
Extensions:

- Dot painting activity inspired by Aboriginal art.
- Hop like a kangaroo game.

Related Activities:

- Listen to a didgeridoo.
- Explore marine life of the Great Barrier Reef.





17. Flags of the Continents

Age Group: 3–6 years

Materials:

- Set of flags for each continent
- Control cards or posters with flag-country names
- World map or puzzle map

Presentation:

1. Say: “Each country has a flag, like a symbol, to represent it.”
2. Show 2–3 flags and name the countries (e.g., “This is the flag of Japan. It has a red circle for the sun.”).
3. Match flag cards to the correct continent map or globe area.
4. Invite the child to match the rest using the control cards as help.

Control of Error:

Control cards/posters with matching flags and country names.

Points of Interest:

Bright colors and patterns in flags; meaningful symbols.

Purpose:

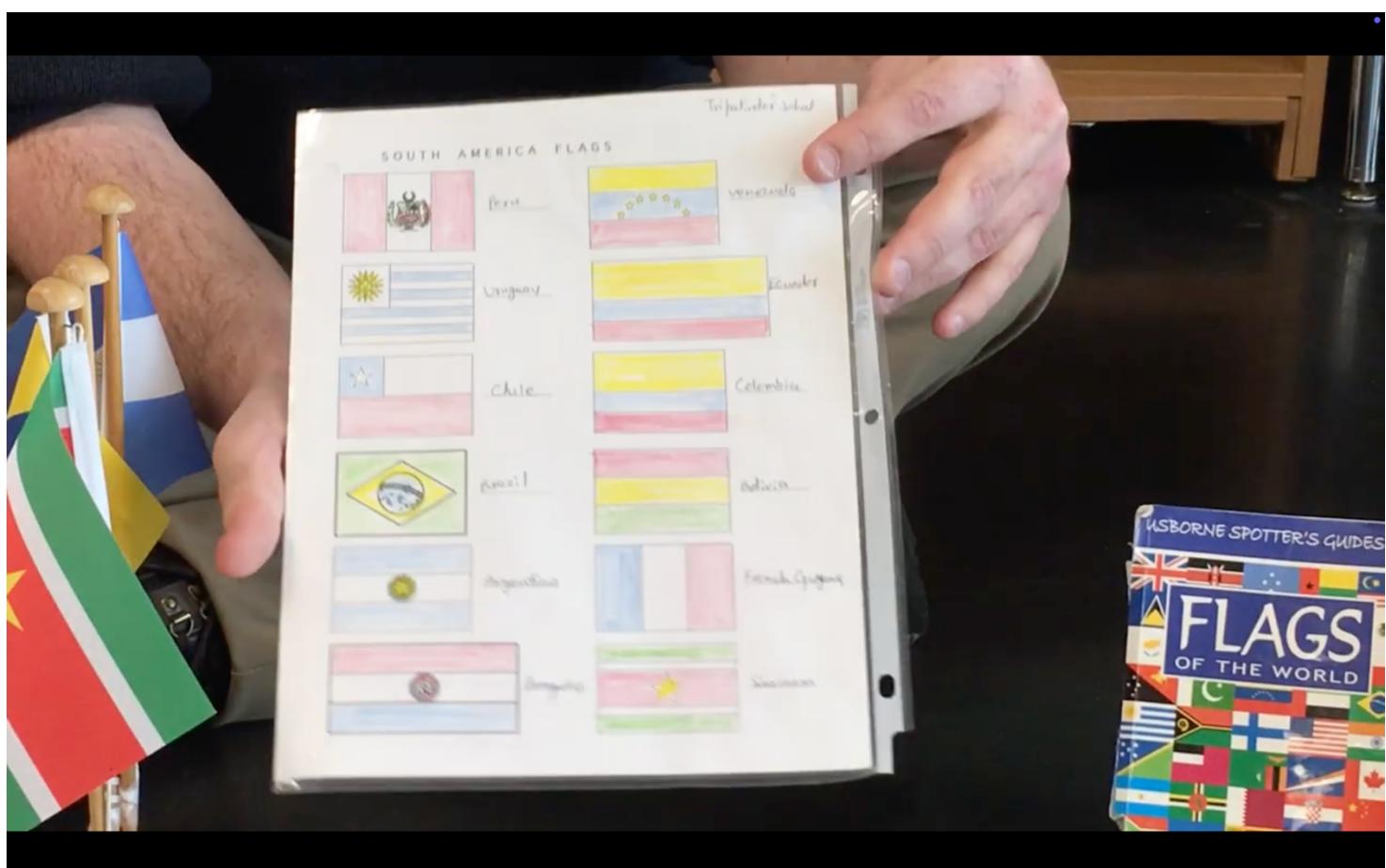
- *Direct:* Recognize world flags and their countries.
- *Indirect:* Interest in world geography and national identity.

Extensions:

- Color your own flags
- Flag scavenger hunt on the world map
- Match flags to traditional foods or animals

Related Activities:

- Look up what different flag symbols mean
- Group flags by color, shape, or continent



Zoology – Introduction

Zoology introduces the young child to the animal kingdom, building curiosity and wonder for the diversity of life. In the Montessori classroom, this area begins with sensorial and visual exploration: children use realistic animal figures, puzzles, classification cards, and models to investigate characteristics and differences among animals.

The curriculum typically follows this progression:

- **Living vs. Non-Living**
- **Vertebrates vs. Invertebrates**
- **Five Classes of Vertebrates:** Fish, Amphibians, Reptiles, Birds, and Mammals
- **Body Part Nomenclature and Functions** (e.g., parts of a bird, parts of a fish)

Zoology lessons encourage:

- Observation of movement, coverings, diet, and habitat
- Respect and empathy for animals
- Scientific vocabulary development
- Classification and sorting skills

Through direct experience and observation, children develop early scientific inquiry and a compassionate view of the natural world. The Montessori environment encourages care of class pets, nature walks, and the study of local wildlife as part of everyday life.

ZOOLOGY

22. Living and Non-Living

Age Group: 3–6 years

Materials:

- Picture cards showing living and non-living things (animals, people, plants vs. rocks, cars, pencils)
- Two labeled baskets or mats: “Living” and “Non-Living”

Presentation:

1. Invite the child: “Let’s learn about things that are living and not living.”
2. Show one card at a time.
 - Say: “This is a tree. It grows, needs water, and can make seeds. It is *living*.”
 - “This is a rock. It does not grow or breathe. It is *non-living*.”
3. Place the card under the correct label.
4. Invite the child to match the rest independently.

Control of Error:

Cards are color-coded or checked on the back for self-correction.

Points of Interest:

Sorting familiar objects; discovering nature is alive.

Purpose:

- *Direct:* Understand the difference between living and non-living.
- *Indirect:* Develop observation skills and awareness of life processes.

Extensions:

- Create a collage of living and non-living things
- Go on a nature walk and sort findings
- Use a Venn diagram to sort objects that were once living



Living

Non-Living



Non-Living

Living



23. Vertebrates and Invertebrates

Age Group: 3–6 years

Materials:

- Picture cards of animals with backbones and without
- Animal figurines or models
- Vertebrate/invertebrate classification chart
- Optional: real x-ray images or model skeletons

Presentation:

1. Say: “All animals can be sorted into two groups—some have bones inside their body, and some don’t.”
2. Show a vertebrate (e.g., dog): “Feel your back? That’s a backbone. This dog has one too.”
3. Show an invertebrate (e.g., jellyfish): “This jellyfish has no bones.”
4. Sort cards into two columns: “Vertebrates” and “Invertebrates.”

Control of Error:

Cards include classification symbols for self-checking.

Points of Interest:

Feeling their own backbone, squishy invertebrate examples.

Purpose:

- *Direct:* Identify and classify vertebrates and invertebrates.
- *Indirect:* Learn about body structures.

Extensions:

- Sort animal figurines by backbone/no backbone
- Make clay models of a fish and a jellyfish
- Create a class chart with drawings

24. The Five Classes of Vertebrates

Age Group: 3–6 years

Materials:

- 3-part cards: fish, amphibians, reptiles, birds, mammals
- Classification chart
- Representative animal models or images
- Booklets for each class

Presentation:

1. Say: "Vertebrates can be sorted into 5 special groups."
2. Introduce one group at a time:
 - *Fish* – live in water, have fins, lay eggs.
 - *Amphibians* – begin in water, grow legs, smooth skin.
 - *Reptiles* – dry scaly skin, lay eggs.
 - *Birds* – feathers, beaks, most fly.
 - *Mammals* – have fur or hair, drink milk from their mothers.
3. Use cards and figurines to sort animals.

Control of Error:

Classification symbols on cards, color coding by group.

Points of Interest:

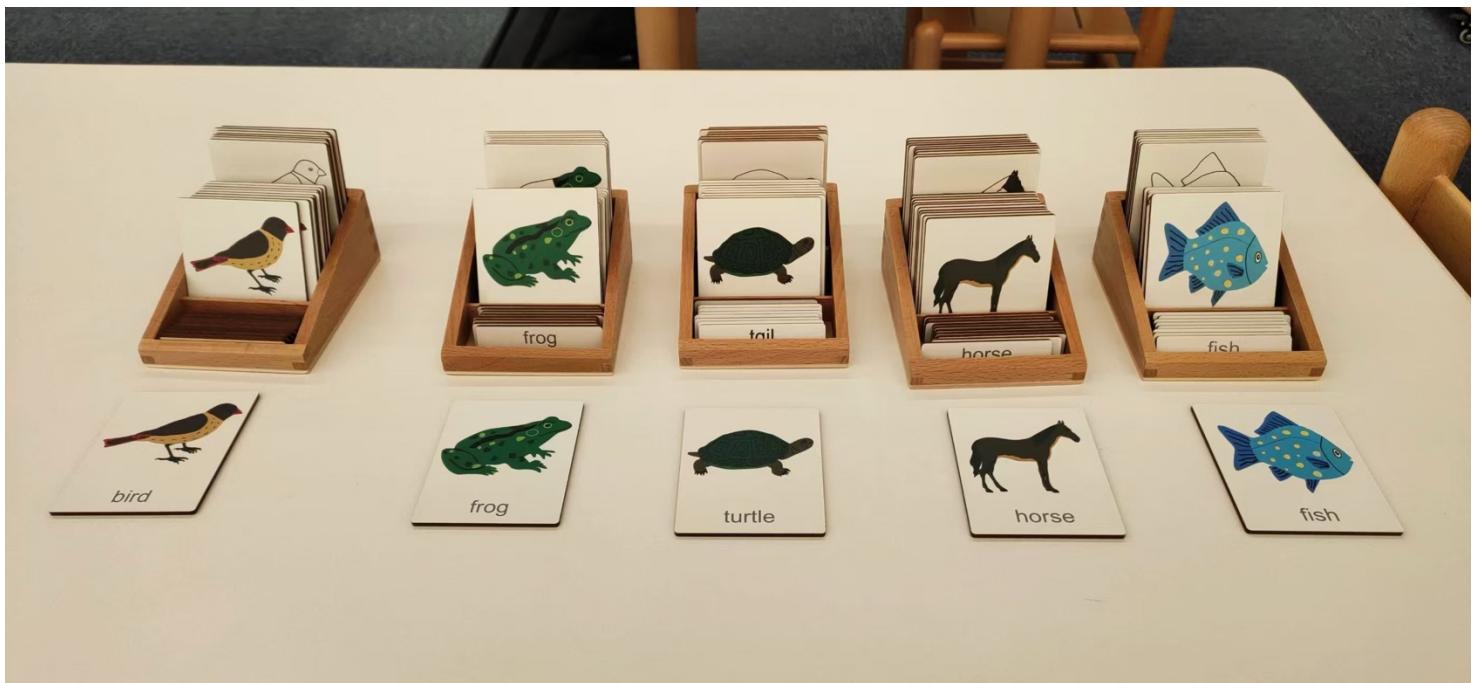
Animal sounds, touching feathers, scales, or fur.

Purpose:

- *Direct:* Learn the 5 vertebrate groups.
- *Indirect:* Develop ability to compare, contrast, and classify.

Extensions:

- Create an animal book or poster for each class
- Match skeletons to vertebrate groups
- Act out how each group moves



25. Animal Habitats

Age Group: 3–6 years

Materials:

- Habitat cards (forest, ocean, desert, savanna, Arctic, jungle)
- Matching animal cards or figurines
- Habitat diorama trays (optional)

Presentation:

1. Say: "Animals live in special places called habitats."
2. Show each habitat card: "This is the desert. It's hot and dry. Camels live here."
3. Match animals to their correct habitats.
4. Invite the child to choose animals and sort them.

Control of Error:

Color or symbol codes on cards.

Points of Interest:

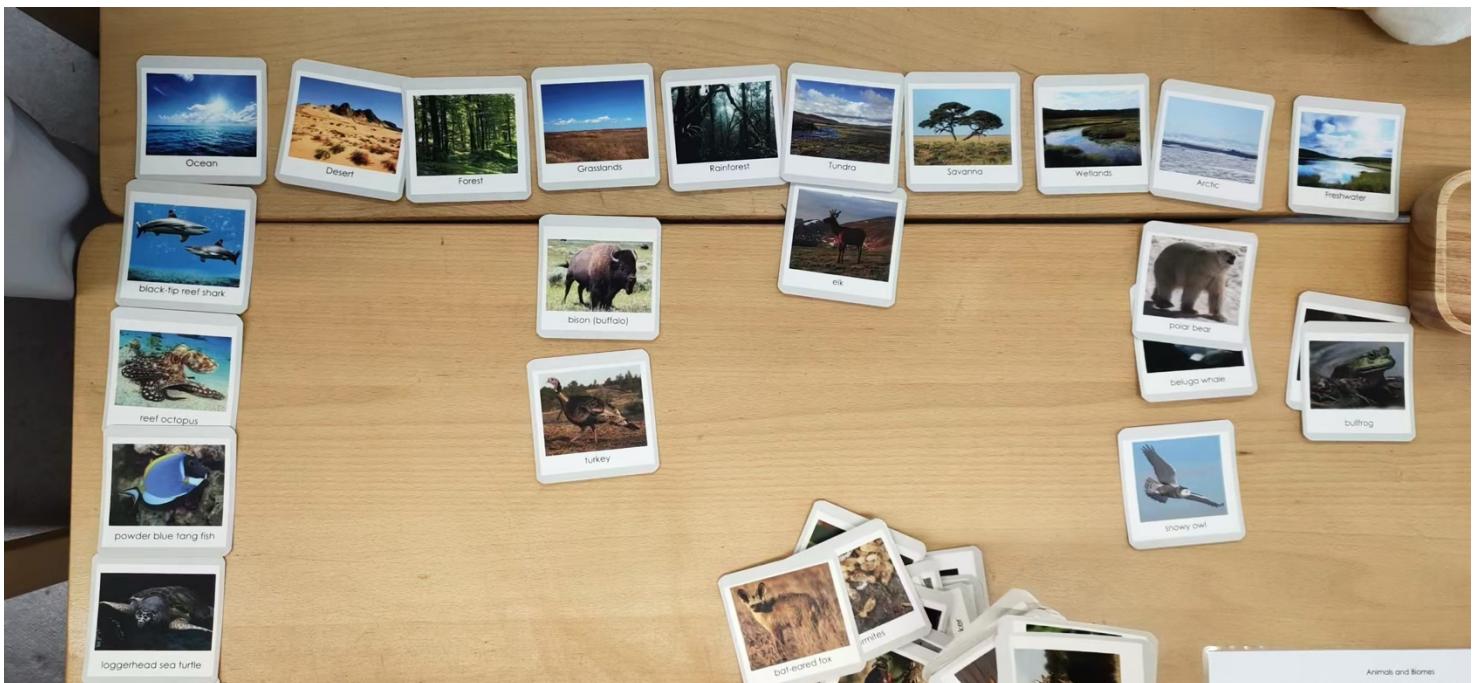
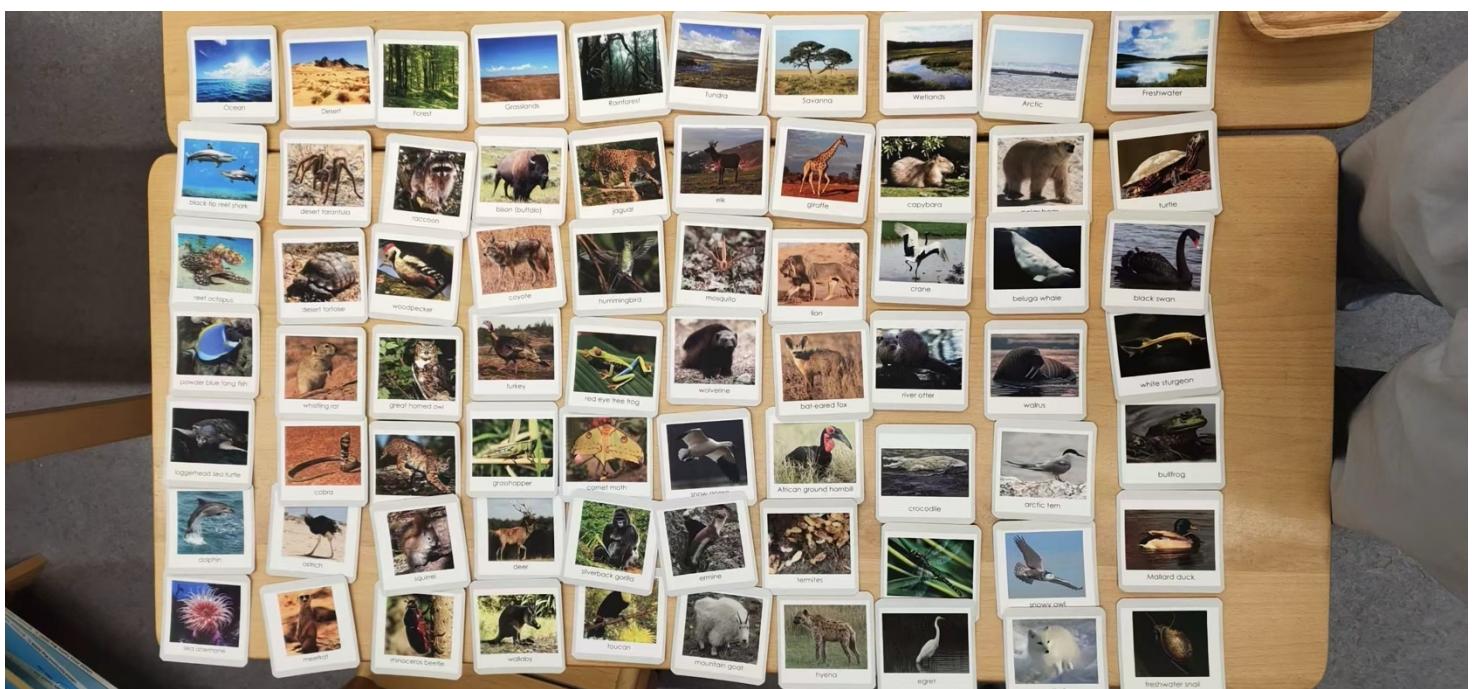
Describing habitats and imagining where they would live.

Purpose:

- *Direct:* Learn where animals live.
- *Indirect:* Develop a sense of biomes and ecosystems.

Extensions:

- Make a habitat shoebox diorama
- Research local habitats and wildlife
- Match animals to food sources in their habitat



26. Animal Nomenclature – 3-Part Cards and Booklets

Age Group: 3–6 years

Materials:

- 3-part cards for parts of animals (external anatomy):
 - Fish: fin, gills, tail, eye
 - Bird: wing, beak, feet, feathers
 - Mammal: ear, nose, paw, tail
 - Reptile: scales, claws, tail, head
- Matching control books

Presentation:

1. Show the child a completed nomenclature card: “This is the wing of the bird.”
2. Match picture to label and definition.
3. Repeat with each animal part.
4. Encourage the child to create their own booklet.

Control of Error:

Control booklet or checked cards.

Points of Interest:

Naming body parts and learning new vocabulary.

Purpose:

- *Direct:* Identify and name parts of common animals.
- *Indirect:* Build language, attention to detail, and observation.

Extensions:

- Trace and label animal body outlines
- Make an “animal parts” booklet
- Play “What’s Missing?” with card parts





Botany – Introduction

In the Montessori philosophy, the study of plants and the natural world supports the child's innate love of nature and life. Botany introduces children to the plant kingdom, starting with real, observable plants in their environment. Children explore the parts of a plant and their functions through real specimens, puzzles, 3-part cards, and classification activities.

Key themes in the Botany curriculum include:

- **Living vs. Non-Living**
- **Needs of Plants:** air, water, sun, soil, space
- **Parts of the Plant:** root, stem, leaf, flower, fruit, seed
- **Leaf Shapes and Margins**
- **Plant Life Cycles**

Botany in the Montessori environment is hands-on and interactive. Children plant seeds, water plants, observe growth, and care for a garden if available. This work not only builds vocabulary and understanding of scientific



27. Plant and Non-Plant

Age Group: 3–6 years

Materials:

- Picture cards of plants and non-plants (tree, flower, cactus vs. rock, chair, toy)
- Two labeled mats or baskets: “Plant” and “Not a Plant”
- Optional: real plant and non-plant objects for sorting

Presentation:

1. Invite the child: “Let’s learn what is a plant and what is not a plant.”
2. Show a plant card and say: “This is a rose. It grows in soil. It is a plant.”
3. Show a non-plant: “This is a spoon. It does not grow. It is not a plant.”
4. Sort the cards, one by one, under each label.
5. Invite the child to sort the remaining cards.

Control of Error:

Color-coding or symbols on the back of the cards.

Points of Interest:

Discovering the living world of plants around them.

Purpose:

- *Direct:* Understand what makes something a plant.
- *Indirect:* Build observation and classification skills.

Extensions:

- Collect plants from outdoors and compare
- Create a collage of plant and non-plant pictures
- Visit a garden and identify plants





28. Parts of the Plant

Age Group: 3–6 years

Materials:

- Large diagram or model of a plant (root, stem, leaves, flower)
- 3-part cards for plant parts
- Nomenclature booklets
- Real plant (e.g., flower in a pot)

Presentation:

1. Show the real plant and diagram.
2. Point and name each part:
 - “This is the root. It holds the plant in the soil.”
 - “This is the stem. It helps the plant stand up.”
 - “These are the leaves. They make food.”
 - “This is the flower. It can make seeds.”
3. Match 3-part cards and read definitions together.
4. Invite the child to label the parts on the real plant or draw their own.

Control of Error:

Control booklet or labeled chart.

Points of Interest:

Naming real plant parts, hands-on observation.

Purpose:

- *Direct:* Learn basic parts of a plant.
- *Indirect:* Build scientific vocabulary and curiosity.

Extensions:

- Dissect a flower and glue parts to paper
- Plant a seed and watch each part grow
- Make a booklet titled “Parts of a Plant”

29. Parts of a Tree

Age Group: 3–6 years

Materials:

- Tree model or diagram (roots, trunk, branches, leaves, bark)
- 3-part cards and booklet
- Bark rubbings, tree samples if available

Presentation:

1. Say: "This is a tree. It has special parts."
2. Point to and name each part:
 - "The roots are underground."
 - "The trunk holds the tree up."
 - "The branches reach out."
 - "Leaves help the tree make food."
3. Match 3-part cards and definitions.
4. Encourage child to identify parts on real trees during outdoor time.

Control of Error:

Control chart or labeled tree diagram.

Points of Interest:

Bark textures, seasonal changes in leaves.

Purpose:

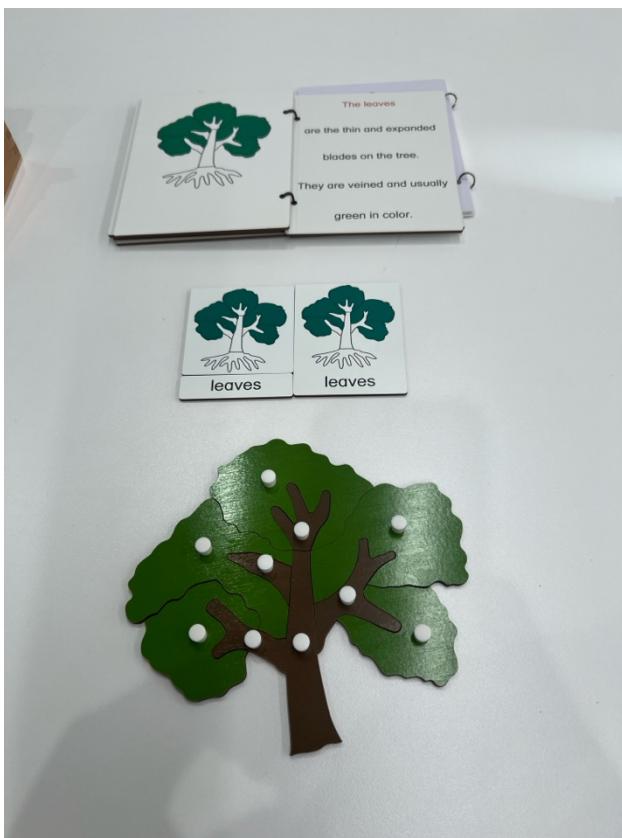
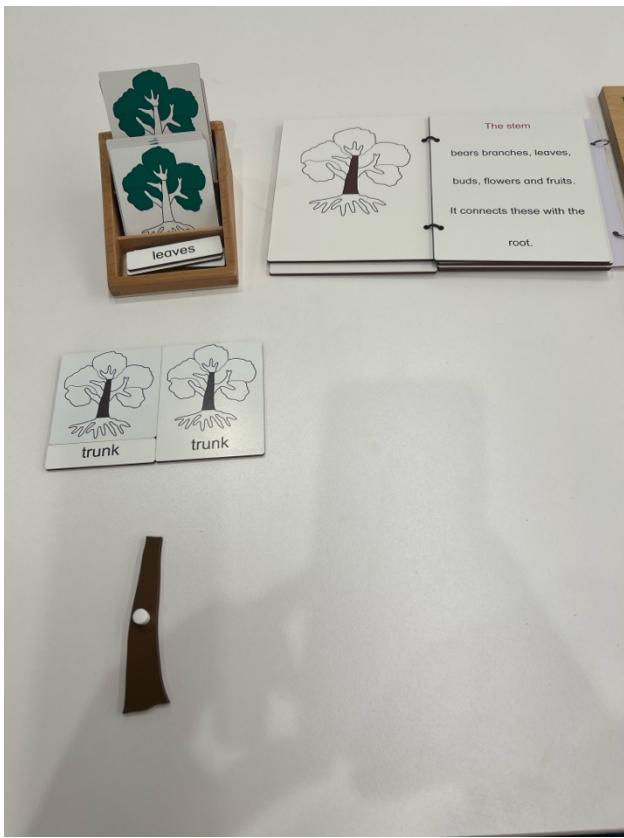
- *Direct:* Identify parts of a tree.
- *Indirect:* Encourage care for nature and observation skills.

Extensions:

- Collect leaves from different trees
- Make a bark rubbing art project
- Draw a family tree









30. Leaf Shapes and Types

Age Group: 3–6 years

Materials:

- Real leaves or leaf replicas
- 3-part cards showing leaf shapes (oval, lanceolate, lobed, heart-shaped, etc.)
- Leaf cabinet (if available)
- Magnifying glass

Presentation:

1. Show a variety of real leaves.
2. Introduce shapes one at a time: “This is an oval-shaped leaf.”
3. Match real leaves to cards or place in the leaf cabinet.
4. Invite the child to sort leaves by shape and texture.

Control of Error:

Cards and control chart with names and images.

Points of Interest:

Feeling the leaves, noticing edges and colors.

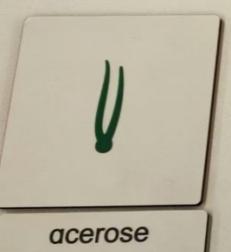
Purpose:

- *Direct:* Identify leaf shapes and begin classification.
- *Indirect:* Refine visual discrimination and botanical vocabulary.

Extensions:

- Make a leaf rubbing booklet
- Sort leaves by color, size, or edge type (smooth, serrated)
- Create a leaf shape art collage





31. Parts of the Flower

Age Group: 3–6 years

Materials:

- Real flower (e.g., lily, daffodil)
- 3-part cards for parts of the flower (petal, stem, sepal, pistil, stamen)
- Flower puzzle
- Nomenclature booklet

Presentation:

1. Show a real flower. Dissect gently as you name the parts.
 - “These are petals. They attract bees.”
 - “The pistil is the part that makes seeds.”
 - “The stamen gives pollen.”
2. Match 3-part cards and definitions.
3. Let the child work with the puzzle or make their own flower drawing.

Control of Error:

Puzzle or control booklet.

Points of Interest:

Pulling apart real flowers, colorful petals.

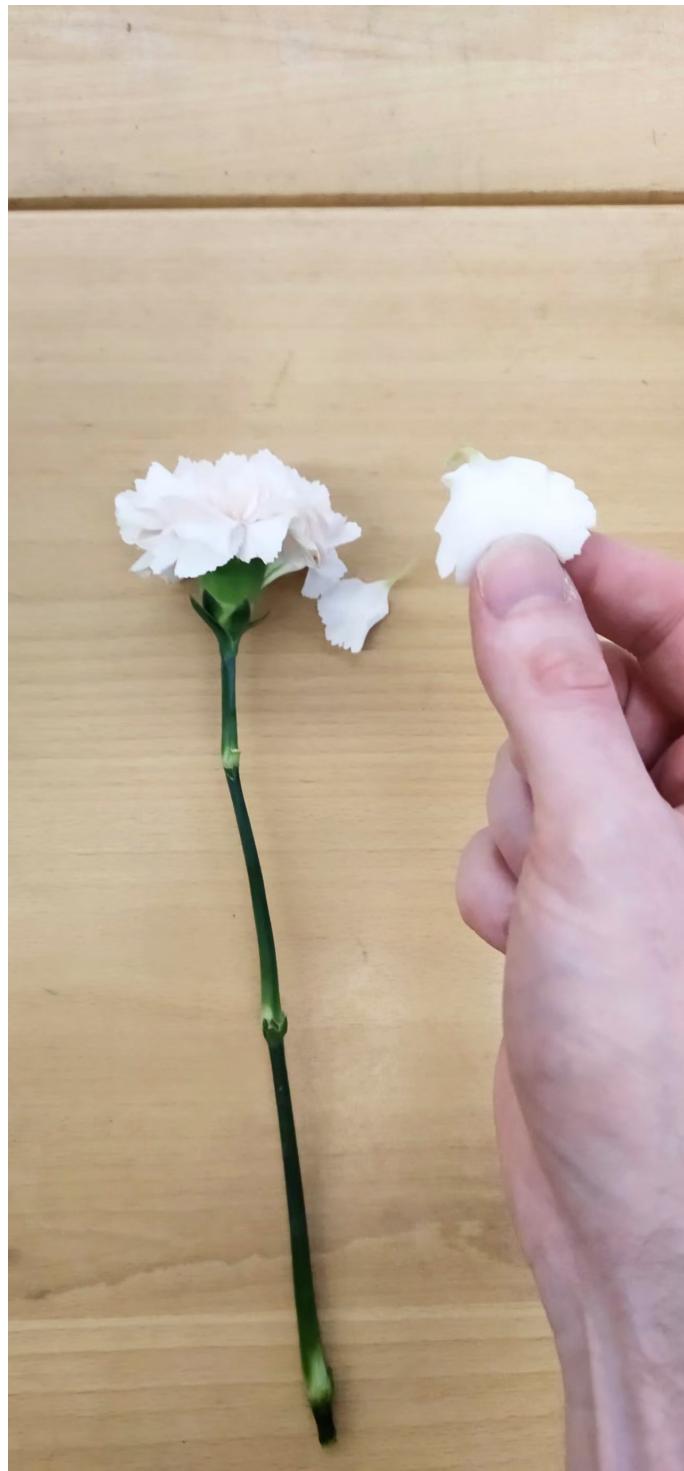
Purpose:

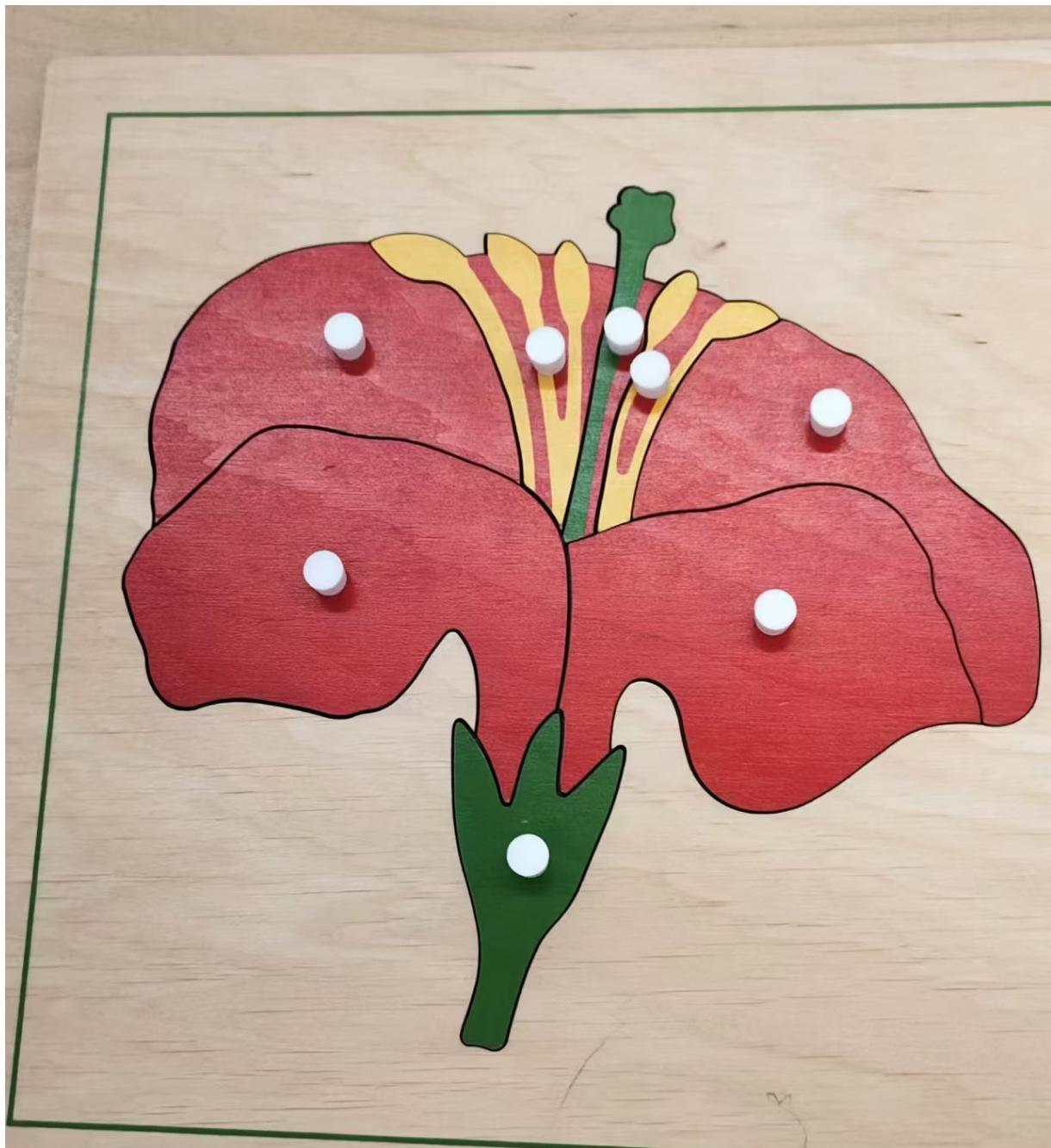
- *Direct:* Identify main parts of a flower.
- *Indirect:* Introduction to reproduction in plants.

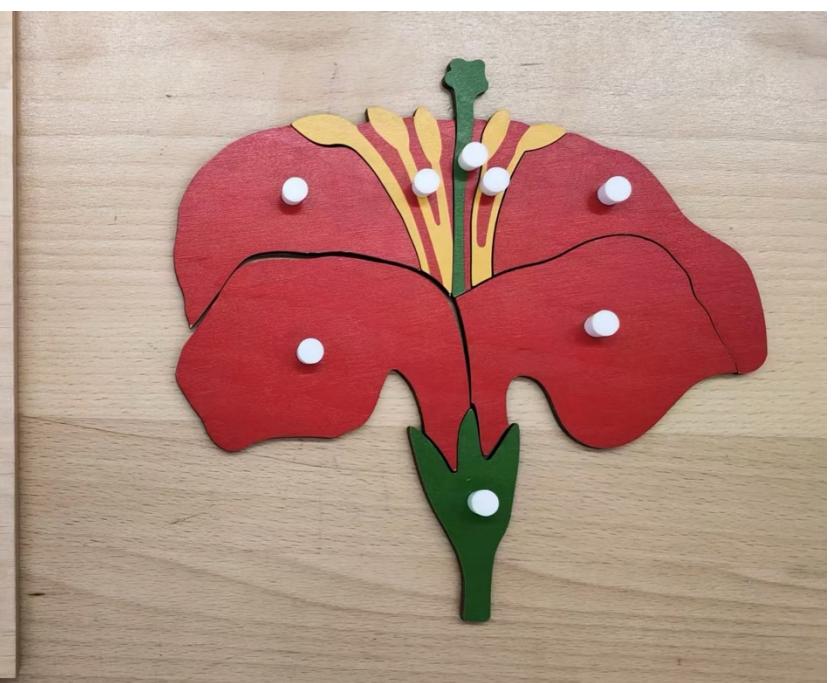
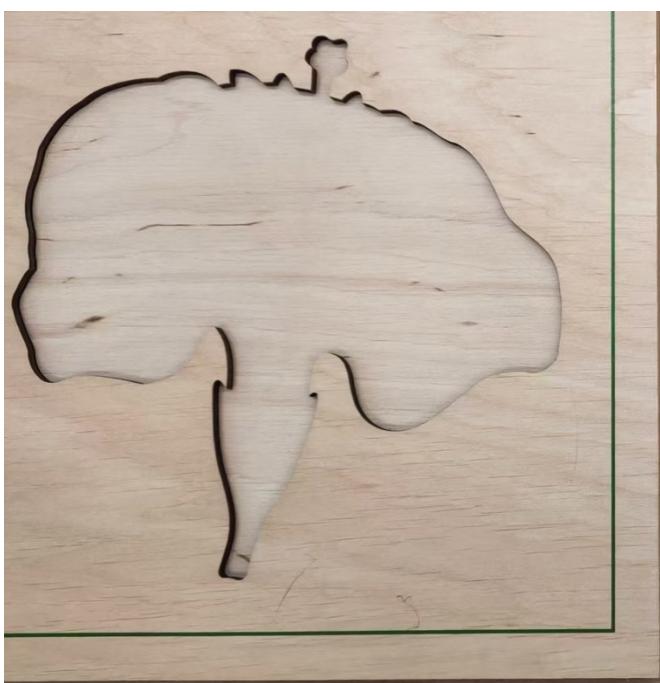
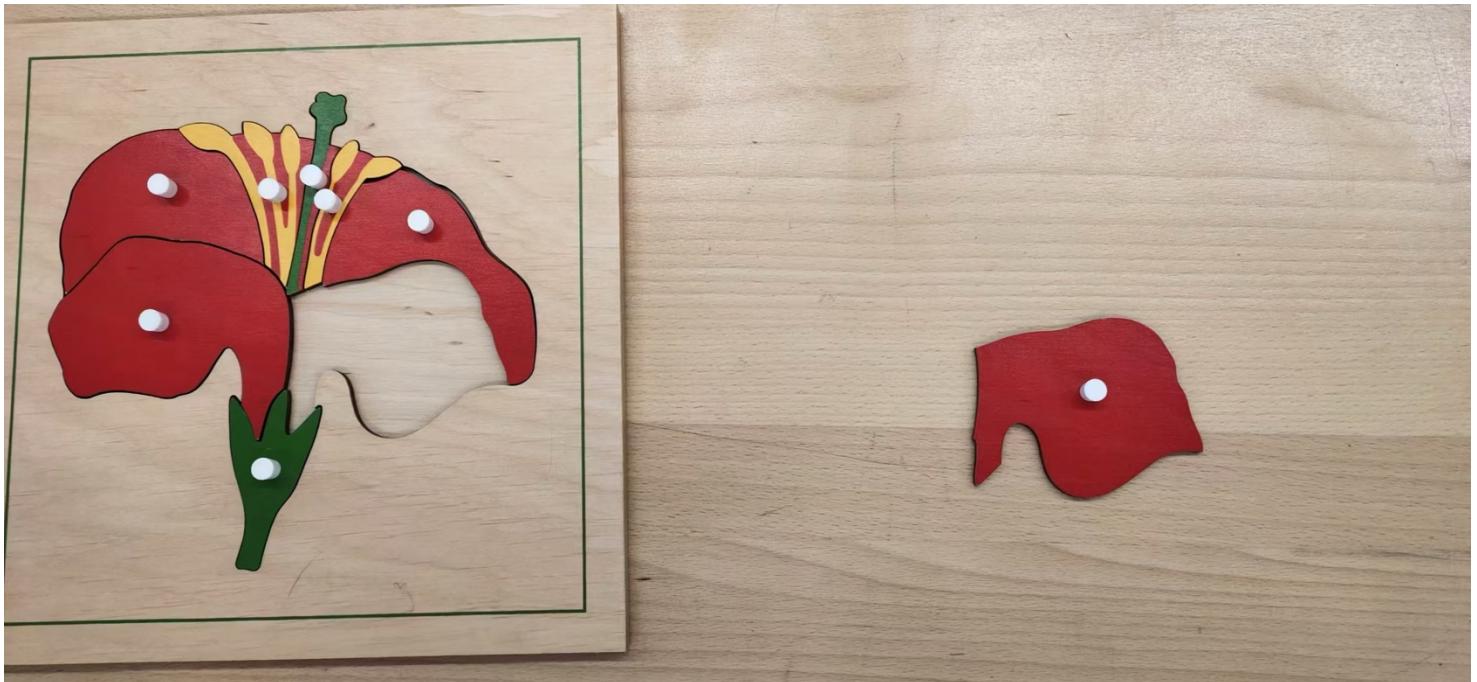
Extensions:

- Press flowers in a book
- Visit a flower garden and label real parts
- Create a labeled flower craft









32. Plant Life Cycle

Age Group: 3–6 years

Materials:

- Life cycle cards or sequencing chart (seed, sprout, seedling, mature plant, flower, fruit)
- Bean sprouting experiment
- 3-part cards and booklet

Presentation:

1. Introduce the life cycle chart: “A plant starts as a seed.”
2. Lay out the cards in order:
 - Seed → Sprout → Seedling → Plant → Flower → Fruit → Seed again
3. Match labels and definitions.
4. Start a bean sprouting experiment in a clear cup or bag.

Control of Error:

Sequencing guide or control chart.

Points of Interest:

Watching a seed grow into a sprout.

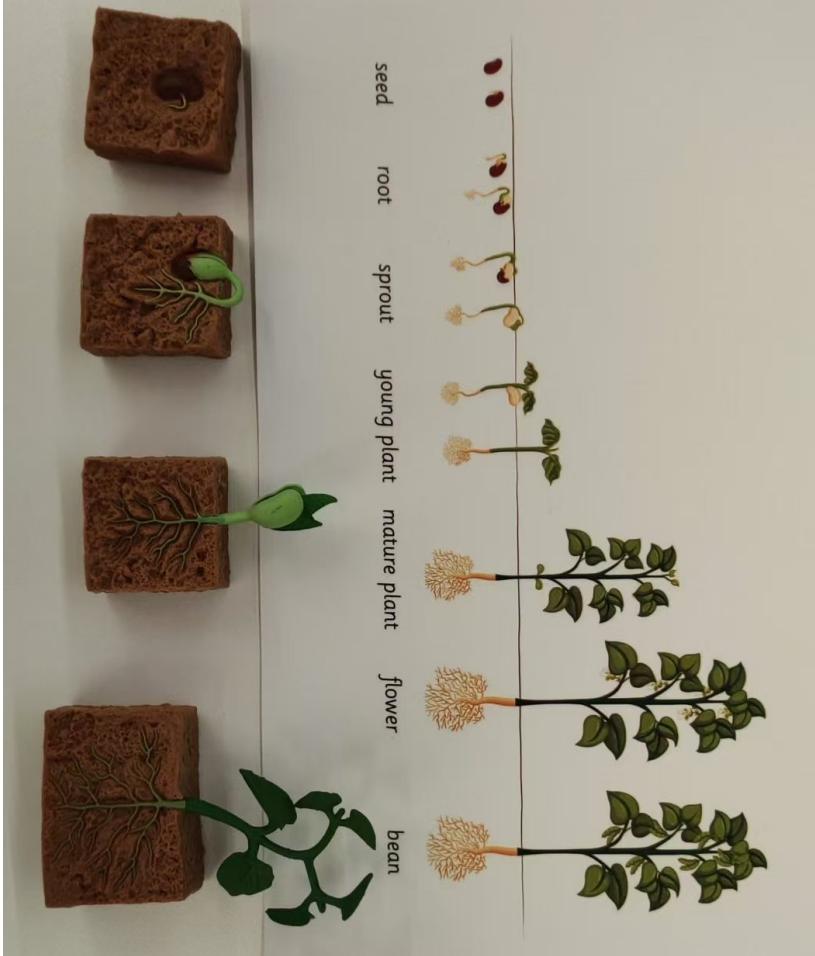
Purpose:

- *Direct:* Understand plant life stages.
- *Indirect:* Appreciate the cycles in nature.

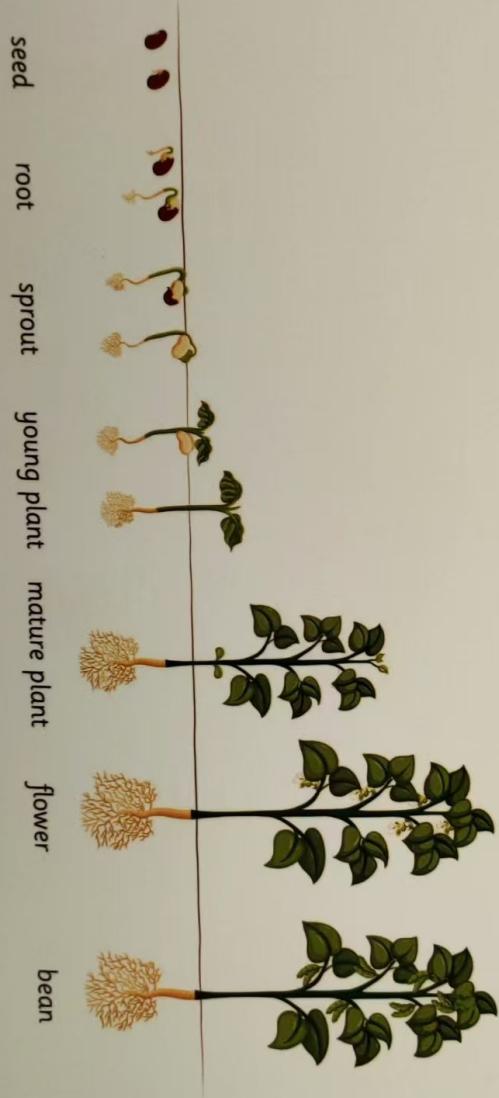
Extensions:

- Draw a timeline of plant growth
- Create a flipbook of the life cycle
- Plant seeds in classroom or garden

Life cycle of a bean



Life cycle of a bean



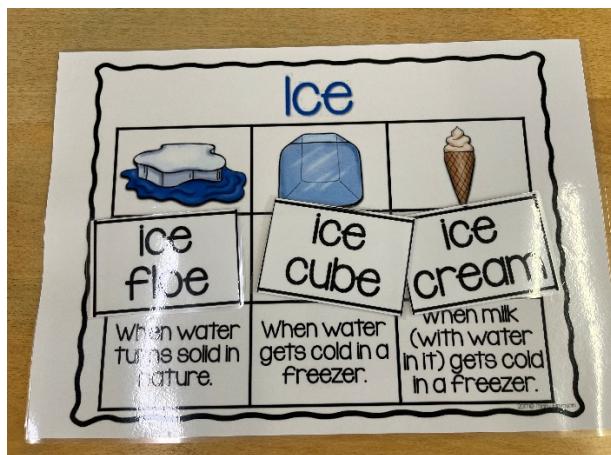
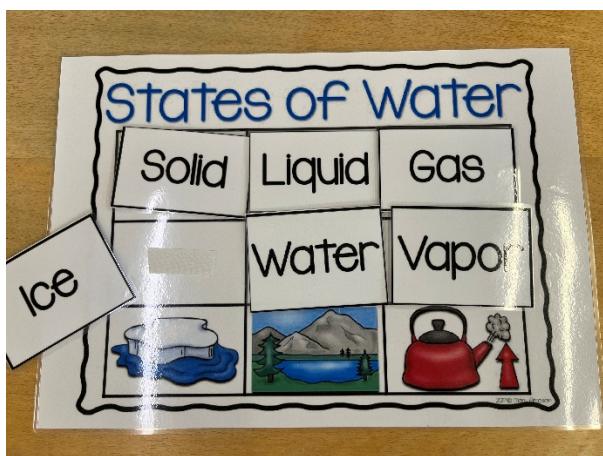
Physical Science – Introduction

The Montessori approach to Physical Science at the early childhood level is experiential and exploratory. Rather than abstract explanations, children are invited to observe, manipulate, and experiment with materials to discover fundamental physical properties and forces.

Concepts introduced include:

- **States of Matter:** solids, liquids, gases
- **Properties of Matter:** size, weight, texture, temperature
- **Basic Physics:** sink and float, magnetism, gravity, balance
- **Energy and Forces:** light, sound, motion, heat (basic introduction)

Lessons are often presented as demonstrations or simple experiments. Children pour, stir, test, and observe changes. These experiences lead to questions and discoveries that lay the foundation for the scientific method. The goal is not memorization but the development of curiosity and observation skills. Control of error is built into many of the activities, allowing the child to learn independently.



PHYSICAL SCIENCE

33. States of Matter

Age Group: 3–6 years

Materials:

- 3-part cards: solid, liquid, gas
- Real objects (ice cube, water, balloon)
- Clear jars, measuring spoons
- Chart with state labels



Presentation:

1. Say: "Matter comes in 3 main forms—solid, liquid, and gas."
2. Show an ice cube: "It keeps its shape. It is a *solid*."
3. Show water: "It flows and takes the shape of the container. It is a *liquid*."
4. Show balloon: "It's filled with *gas*, like air!"
5. Match real items to 3-part cards and allow hands-on exploration.

Control of Error:

Real items and labeled cards for reference.

Points of Interest:

Touching ice and water, feeling the balloon expand.

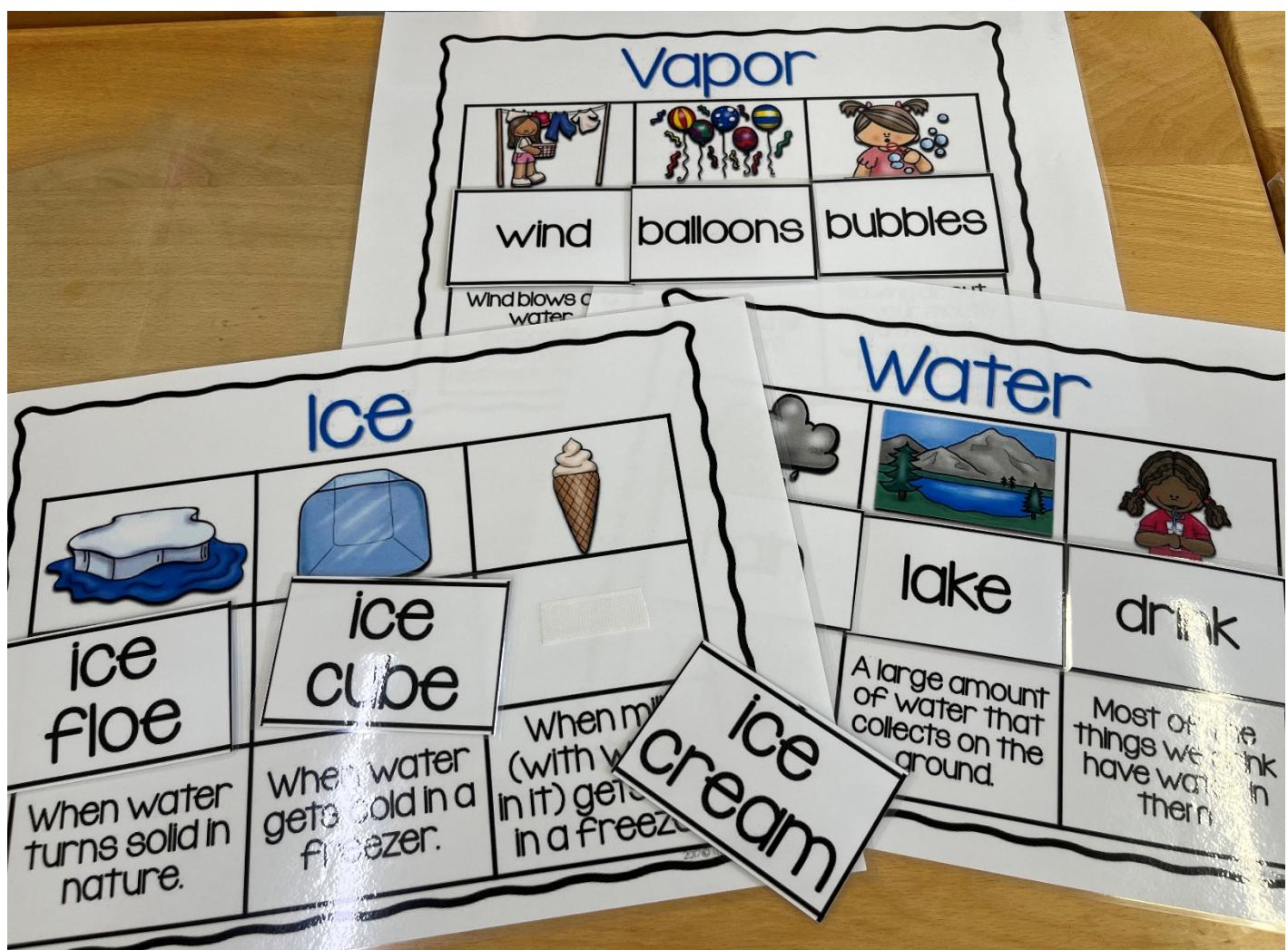
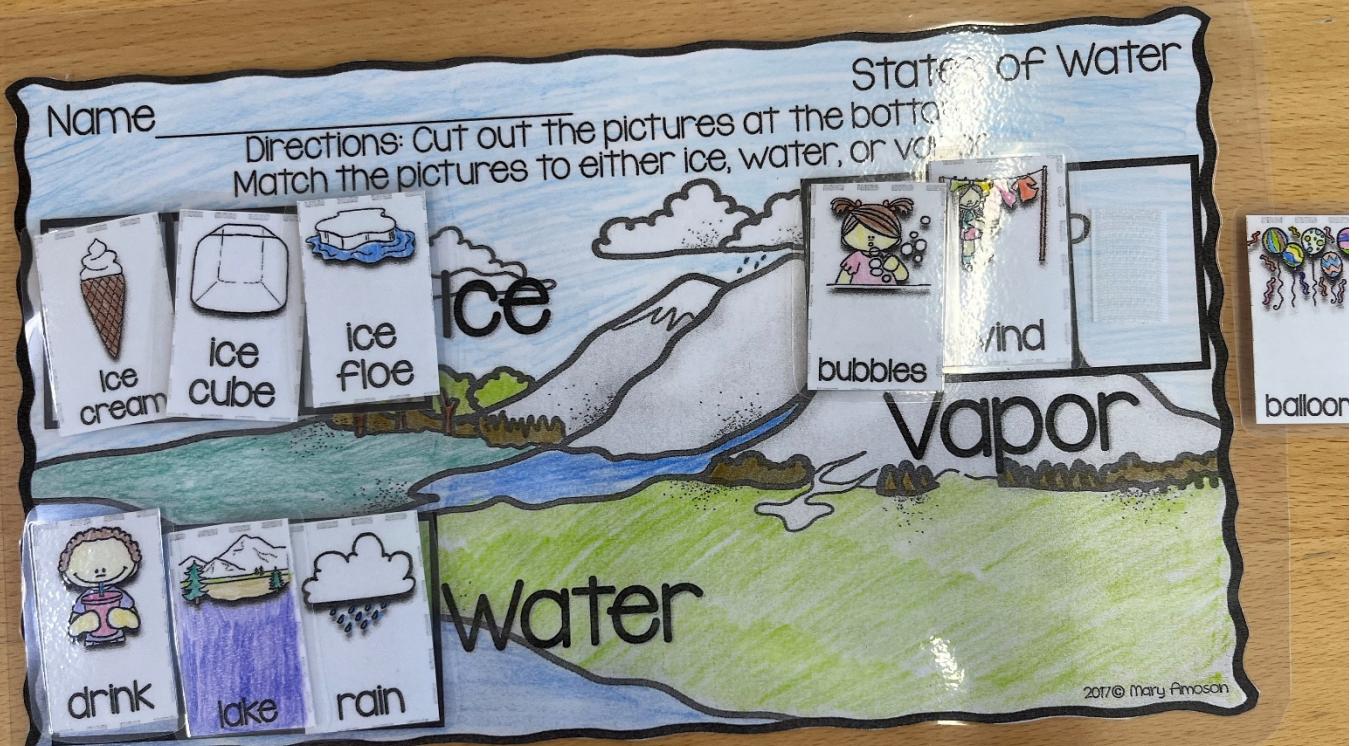
Purpose:

- *Direct*: Identify three basic states of matter.
- *Indirect*: Begin observing properties of materials.

Extensions:

- Observe melting ice into water
- Boil water to see steam (with adult assistance)
- Sort classroom objects by state





34. Sink and Float

Age Group: 3–6 years

Materials:

- Basin of water
- Collection of test objects (coin, plastic toy, sponge, rock, paperclip, cork, etc.)
- Chart: “Sink” and “Float”
- Towel and tray

Presentation:

1. Say: “Let’s find out which things sink and which float.”
2. Place each object in the water: “This rock *sinks*. This cork *floats*.”
3. Invite child to predict what will happen before testing.
4. Sort objects into the chart based on observation.

Control of Error:

Direct observation; self-correcting experience.

Points of Interest:

Splashing and surprise reactions.

Purpose:

- *Direct:* Observe buoyancy.
- *Indirect:* Develop scientific prediction and experimentation.

Extensions:

- Create a chart to record predictions and results
- Try different liquids (oil, saltwater)
- Design a floating boat using foil

35. Magnetic and Non-Magnetic

Age Group: 3–6 years

Materials:

- Magnet
- Tray of items (paperclip, coin, wood piece, rubber band, nail, etc.)
- Chart or sorting mat: “Magnetic” / “Not Magnetic”

Presentation:

1. Say: “Let’s find out which things a magnet will attract.”
2. Demonstrate with a paperclip: “The magnet pulls it—this is magnetic.”
3. Try rubber band: “The magnet does nothing—it is not magnetic.”
4. Allow the child to test and sort all items.

Control of Error:

The magnet itself provides correction.

Points of Interest:

The “pull” of the magnet; unexpected results.

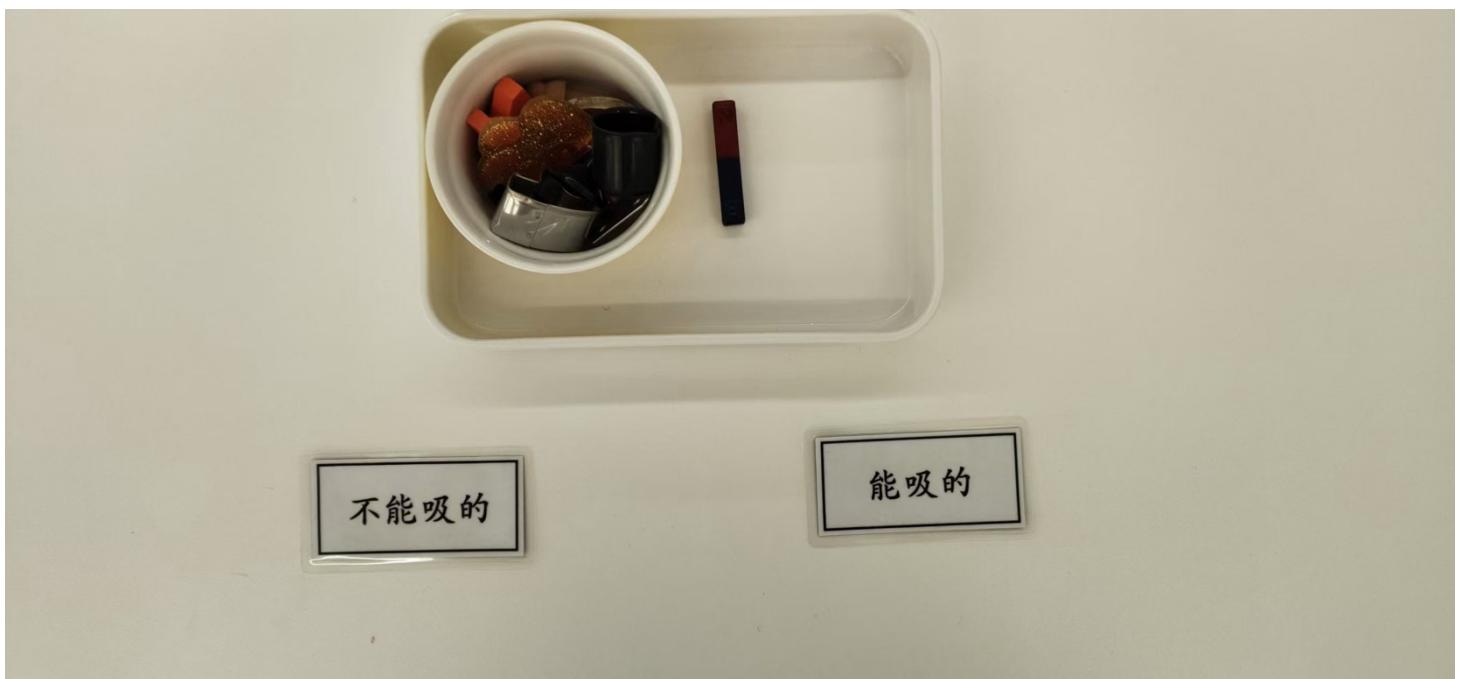
Purpose:

- *Direct:* Learn what materials are magnetic.
- *Indirect:* Introduction to physical forces and materials.

Extensions:

- Create a “magnet treasure hunt” around the classroom
- Sort by metal/non-metal as well
- Use different types of magnets (bar, horseshoe)





不能吸的

能吸的



能吸的

不能吸的



不能吸的

能吸的

Earth and Space Science – Introduction

Montessori Earth and Space Science introduces children to the grandeur of the Earth and the universe beyond. This part of the curriculum builds on their observations of nature and invites them to explore the forces that shape our planet and our solar system. Children begin to understand the Earth's dynamic systems and their impact on life.

Topics include:

- **Layers of the Earth**
- **The Water Cycle**
- **Volcanoes and Earthquakes**
- **The Atmosphere and Weather**
- **The Sun, Moon, and Planets**
- **Day and Night, Seasons, and the Calendar**

Hands-on experiments, visual demonstrations, movement activities, and storytelling are used to bring these topics to life. For example, children may build a volcano model, trace the water cycle with beads, or act out the Earth's rotation and revolution.

Montessori encourages awe and wonder in the child. Earth and Space Science supports a deep respect for nature and helps the child understand their place in the cosmos.

EARTH AND SPACE SCIENCE

36. Land, Air, and Water

Age Group: 3–6 years

Materials:

- Globe or model with color-coded land (brown), air (white/clear), and water (blue)
- Bowl with water, rock, and straw to show each element
- Picture cards of land, air, and water scenes
- Labeled trays or mats

Presentation:

1. Point to each element on the globe:
 - “This is *land*. It’s where we walk.”
 - “This is *water*. It’s in oceans, lakes, and rain.”
 - “This is *air*. We can’t see it, but we can feel it.”
2. Demonstrate with real materials in the bowl.
3. Sort picture cards or objects into the correct category.

Control of Error:

Color coding and physical characteristics.

Points of Interest:

Touching water, feeling air, holding rocks.

Purpose:

- *Direct*: Identify the three elements of Earth.
- *Indirect*: Build understanding of Earth's environment.

Extensions:

- Nature walk to find land, water, and air
- Blow bubbles or fan paper to feel air
- Create a collage of land, air, and water photos





37. Layers of the Earth

Age Group: 3–6 years

Materials:

- Earth cross-section model or diagram (crust, mantle, outer core, inner core)
- 3-part cards
- Felt layers or nesting puzzle

Presentation:

1. Show the whole Earth: “The Earth is round like a ball.”
2. Open or slice to show layers:
 - “The *crust* is the outside, like skin.”
 - “The *mantle* is thick rock.”
 - “The *core* is hot and deep inside.”
3. Use cards and model to name and place each layer.

Control of Error:

Matching layers and labeled cards.

Points of Interest:

Seeing “inside” the Earth like an orange.

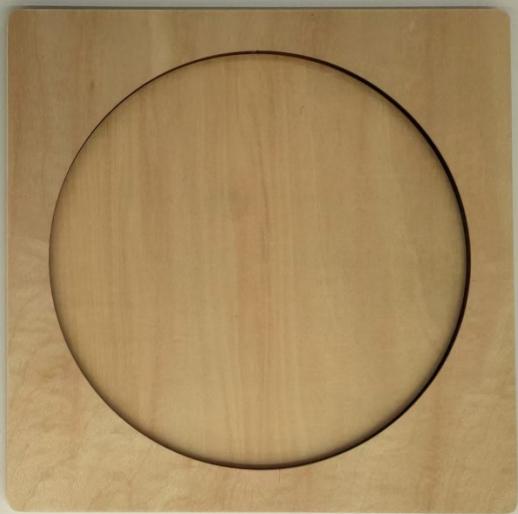
Purpose:

- *Direct:* Learn names and order of Earth’s layers.
- *Indirect:* Build spatial awareness and scientific vocabulary.

Extensions:

- Draw or paint Earth's layers
- Make a 3D model from clay
- Compare layers to a hard-boiled egg





38. Weather

Age Group: 3–6 years

Materials:

- Weather chart with symbols (sunny, cloudy, rainy, windy, snowy)
- Daily calendar
- Real objects (umbrella, sunglasses, coat)
- 3-part cards

Presentation:

1. Look outside and ask: “What’s the weather like today?”
2. Introduce symbols: “This means *rainy*. This means *sunny*.”
3. Match weather types with real objects.
4. Record daily weather on the chart.

Control of Error:

Matching objects and symbols.

Points of Interest:

Dressing weather dolls, weather songs.

Purpose:

- *Direct*: Recognize and describe daily weather.
- *Indirect*: Build pattern recognition and awareness of environment.

Extensions:

- Make a weather booklet
- Observe and graph weekly weather
- Sing weather songs

39. Seasons

Age Group: 3–6 years

Materials:

- Pictures of seasonal scenes
- Objects or clothing for each season
- 3-part cards
- Circle of seasons chart

Presentation:

1. Present the seasons: “There are four seasons in a year.”
 - “*Spring* has flowers. *Summer* is hot. *Fall* has leaves falling. *Winter* is cold and snowy.”
2. Use cards and real objects to match.
3. Place items on the seasonal circle.

Control of Error:

Color coding or clear seasonal clues.

Points of Interest:

Identifying own clothes with seasons, holidays.

Purpose:

- *Direct*: Learn about seasonal changes.
- *Indirect*: Build sense of time and observation of nature.

Extensions:

- Sort fruits and vegetables by season
- Make a seasonal collage
- Dress a seasonal figure



40. Day and Night

Age Group: 3–6 years

Materials:

- Globe and flashlight
- Picture cards: day and night activities
- 3-part cards

Presentation:

1. Use the globe and light: “When the sun shines on this side, it is *day*. When the sun is not shining, it is *night*.”
2. Show pictures: “We sleep at *night*. We eat breakfast during the *day*.”

3. Sort activities into day and night columns.

Control of Error:

Logical activity connection.

Points of Interest:

Globe shadow movement, flashlight sun.

Purpose:

- *Direct:* Learn the concept of day and night.
- *Indirect:* Build understanding of time and Earth's rotation.

Extensions:

- Create a personal schedule
- Paint a day/night scene
- Watch sunrise or sunset



41. The Solar System

Age Group: 3–6 years

Materials:

- Solar system model or felt board
- 3-part cards for planets
- Globe
- Book or poster

Presentation:

1. Show model: “This is the *Sun*. These are the *planets* that go around it.”
2. Point to each planet: “This is *Mercury*. This is *Venus*...” and so on.
3. Match cards and name planets in order.

Control of Error:

Control chart or planet order song.

Points of Interest:

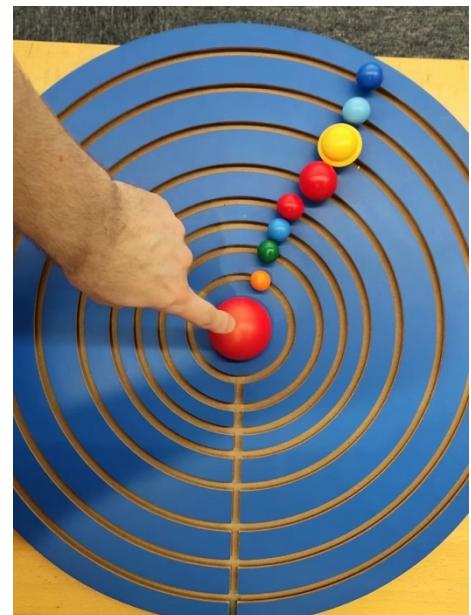
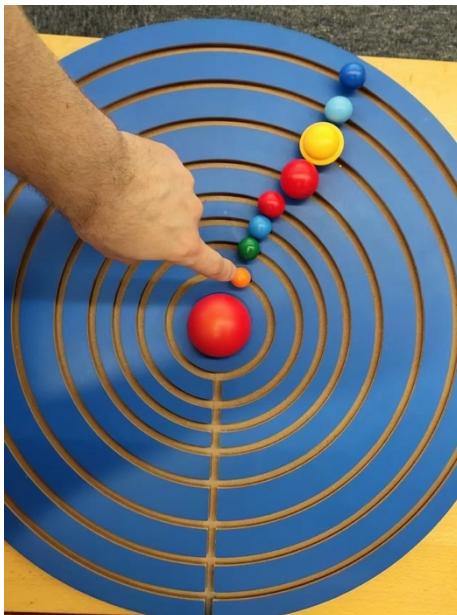
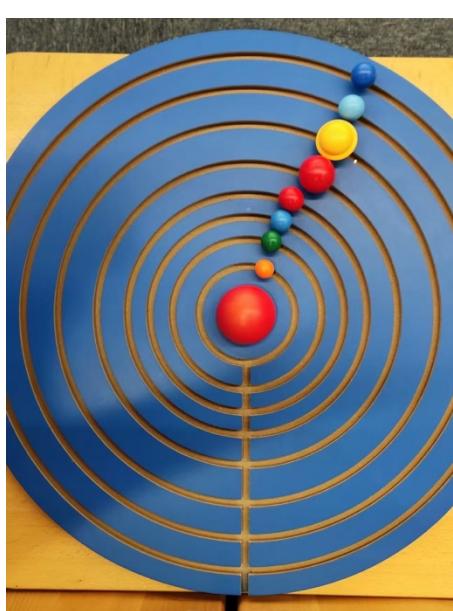
Planet sizes, colorful visuals.

Purpose:

- *Direct*: Name and identify planets.
- *Indirect*: Spark interest in space and science.

Extensions:

- Make a solar system mobile
- Learn a planet song
- Compare planet sizes with objects (e.g., ball for Jupiter, marble for Mercury)





水星



金星



地球



天王星



火星



水星



金星



地球



天王星



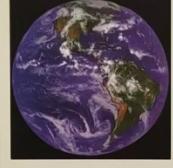
火星



水星



金星



地球



天王星



火星



水星



金星



地球



天王星



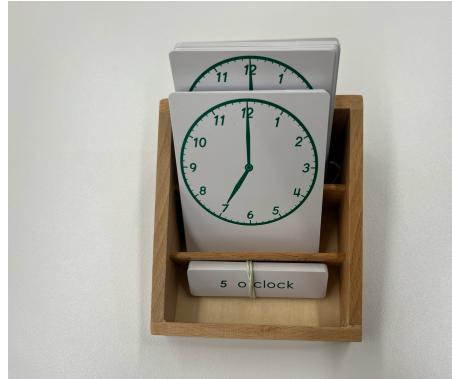
火星

HISTORY AND THE ARTS

42. Introduction to Time

Age Group: 3–6 years

Materials:



- Sand timer, analog clock, calendar
- Picture cards showing parts of the day (morning, afternoon, evening, night)
- Daily routine chart

Presentation:

1. Say: "Time helps us know when things happen."
2. Show sand timer: "We can see time passing."
3. Use picture cards to describe daily events: "We eat breakfast in the *morning*. We go to bed at *night*."
4. Arrange pictures in order.

Control of Error:

Sequence of events and visual clues.

Points of Interest:

Watching time pass in a sand timer, linking daily life to time.

Purpose:

- *Direct:* Introduce the concept of time.
- *Indirect:* Build a sense of sequence and

Extensions:

- Use a calendar to mark important dates
- Create a picture schedule
- Match events to times of day



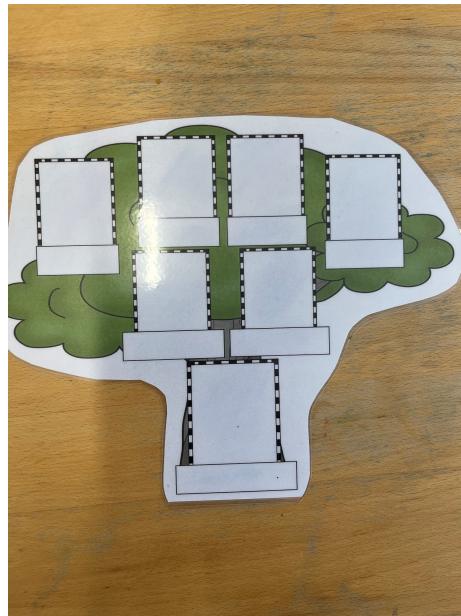


43. Family Tree

Age Group: 3–6 years

Materials:

- Tree chart template
- Pictures of family members
- Labels (Mom, Dad, Grandparents, etc.)



Presentation:

1. Introduce the family: "These are the people who take care of you."
2. Place photos on the chart starting with the child.
3. Add parents, grandparents, siblings as appropriate.

Control of Error:

Familiarity with faces and names.

Points of Interest:

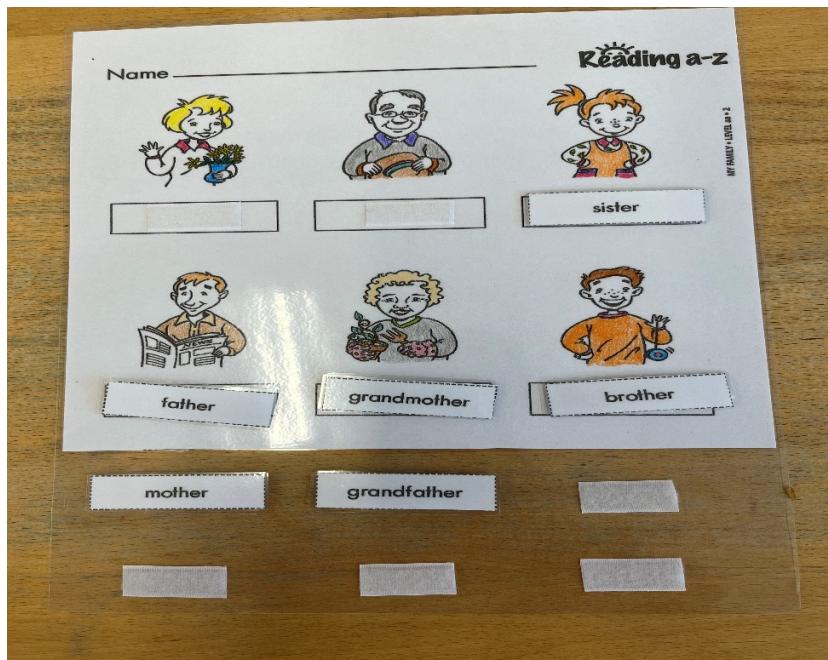
Talking about family members and their roles.

Purpose:

- *Direct:* Recognize family relationships.
- *Indirect:* Build identity and understanding of community.

Extensions:

- Draw family portraits
- Make a book: "All About My Family"
- Share stories or traditions from each family member





44. Music and Movement

Age Group: 3–6 years

Materials:

- Instruments (bells, tambourine, rhythm sticks)
- Music player
- Scarves or ribbons for movement

Presentation:

1. Say: "Music is sound that makes us want to move or feel."
2. Explore fast and slow, loud and soft.
3. Play instruments together or move to the rhythm.

Control of Error:

Sound feedback and rhythm patterns.

Points of Interest:

Dancing freely, playing real instruments.

Purpose:

- *Direct:* Develop rhythm and appreciation for music.
- *Indirect:* Support coordination and listening.

Extensions:

- Create your own instrument
- Listen to music from around the world
- Match movements to music types (ballet, marching)



Glossary of Terms

Montessori Cultural and Science Curriculum (Ages 3–6)

Adaptation – The way plants and animals change over time to survive in their environment.

Amphibian – A cold-blooded vertebrate animal that lives part of its life in water and part on land (e.g., frogs, salamanders).

Biome – A large natural area with its own climate, animals, and plants (e.g., desert, rainforest, tundra).

Botany – The study of plants, their parts, needs, and life cycle.

Cardinal Directions – The four main directions: North, South, East, and West.

Classification – Sorting things into groups based on shared features (used in zoology and botany).

Climate – The typical weather conditions in a certain place over a long period of time.

Companion Planting – Growing certain plants together that help each other grow.

Continent – A large landmass on Earth. There are seven continents: Africa, Antarctica, Asia, Australia, Europe, North America, and South America.

Control of Error – A built-in feature of Montessori materials that allows the child to check and correct their own work independently.

Culture – The customs, foods, traditions, language, and art of a group of people.

Cycle of the Seasons – The natural rotation through spring, summer, autumn (fall), and winter each year.

Ecosystem – A community of living things and their environment, working together.

Equator – An imaginary line around the middle of the Earth, dividing it into Northern and Southern Hemispheres.

Experiment – A scientific test used to observe what happens when materials or conditions change.

Family – A group of people related by birth, marriage, or love, forming the foundation of community.

Fish – A class of cold-blooded, water-dwelling vertebrates with gills, scales, and fins.

Flower – The part of the plant that helps it reproduce and often attracts pollinators like bees.

Fossil – The preserved remains or impressions of ancient living things, usually found in rocks.

Geography – The study of Earth's surface, including land, water, people, places, and cultures.

Habitat – The natural home or environment where a plant or animal lives.

History – The study of past events, people, and changes over time.

Invertebrate – An animal without a backbone (e.g., insects, worms, jellyfish).

Island – A landform completely surrounded by water.

Landform – A natural feature of the Earth's surface (e.g., mountain, valley, lake, island).

Leaf – The part of a plant where photosynthesis happens; it makes food for the plant.

Magnetism – A force that pulls or pushes certain materials like iron.

Mammal – A warm-blooded vertebrate that usually has fur or hair and feeds its young with milk.

Map – A visual representation of an area, showing land, water, and other features.

Moon Phases – The changing shape of the moon as it orbits the Earth (e.g., new moon, full moon).

Nomenclature Cards – Montessori cards with pictures and names used to teach vocabulary and concepts.

Observation – Watching carefully to learn more about something.

Ocean – A vast body of salt water that covers much of the Earth's surface. There are five oceans.

Photosynthesis – The process by which green plants use sunlight to make food.

Planet – A large body in space that orbits a star (like Earth orbiting the Sun).

Pollination – The transfer of pollen from one flower to another, helping plants make seeds.

Puzzle Map – A Montessori material that allows children to physically remove and replace parts of the world map or continent maps.

Reptile – A cold-blooded vertebrate with dry, scaly skin, usually laying eggs (e.g., lizards, snakes).

Root – The part of a plant that anchors it and takes in water and nutrients from the soil.

Scientific Method – A way of asking questions, forming a guess (hypothesis), testing it, and drawing conclusions.

Seed – The part of a plant that can grow into a new plant.

Sensorial – A Montessori approach that uses the senses to explore and understand concepts.

Sink and Float – A science activity where children test whether objects go down (sink) or stay on the surface (float) in water.

Solar System – The Sun and all the objects that orbit it, including the planets.

Solid, Liquid, Gas – The three main states of matter: solids hold shape, liquids flow, gases spread out.

Space – The area beyond Earth's atmosphere, including stars, planets, and galaxies.

Stem – The part of the plant that holds it up and carries water from the roots to the leaves.

Sun – The star at the center of our solar system that provides light and heat to Earth.

Timeline – A visual line showing events in order, often used to teach history or life sequences.

Vertebrate – An animal with a backbone (e.g., fish, amphibians, reptiles, birds, mammals).

Volcano – A mountain with an opening that can erupt with lava, ash, and gases.

Water Cycle – The continuous movement of water through evaporation, condensation, precipitation, and collection.

Weather – The current condition of the atmosphere: temperature, wind, rain, clouds, etc.

Zoology – The study of animals, their classifications, and life habits.