



THE AGA KHAN UNIVERSITY
Institute for Educational Development

FOSTERING ENVIRONMENTAL SUSTAINABILITY THROUGH EARLY CHILDHOOD EDUCATION (ECE)

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AKU-IED

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SUPERVISOR'S NOTE

As an environmental scientist, many of my advocacy sessions and lectures ended with the conclusion that we need to create more education and awareness about environmental challenges. Evidence also suggests that lack of awareness leads to lack of action. Once awareness is created, a change in attitude and behavior can be expected. However, it is also evident that until systems change, most of the issues will remain unresolved.

I was also aware that a child is developing and being influenced by their environment in their prenatal times as well. When I joined the IED, Tahira was one of my first research students. She expressed her interest in conducting an action research in environment and ECED as she had been teaching in ECED classrooms for nearly seven years. She developed and adapted lessons for her research and we learnt many things in this research which I hope we are able to publish soon.

However, there are a few more people who have contributed to this work, whom I would like to acknowledge at this point. After my supervision, her thesis was reviewed by Dr. Ali Nawab and Dr. Nasima Shakeel as a part of the examination process at IED. Additionally, after designing this booklet Dr. Nasima was requested to review the content again. Miss Sara Hassan has given design ideas for us to prepare a better booklet and added elements to some pages. Special thanks to Miss Nahida Ahmed for proofreading the final draft.

I would also like to acknowledge all the people from within and outside of AKU for receiving our former booklets with open hearts. It encouraged us to make these lesson plans open for public use as well.

As always, we welcome your feedback and suggestions. You can reach out to me directly at fozia.parveen@aku.edu for any suggestions and future collaborations.

Best Regards,

Fozia Parveen

Assistant Professor, AKU-IED

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SIGNIFICANCE OF NATURE PEDAGOGY

Climate change, environmental pollution and biodiversity loss present significant challenges to ecology, health, and well-being today (Askerlund et al., 2022; Chawla, 2015). Schools have emerged as crucial settings for cultivating children's environmental awareness.

Natural environments such as gardens and forests provide the perfect setting for children's imagination, creativity, and sensory experiences (Almeida et al., 2019). Unlike supervised indoor environments or screen-based activities, natural settings provide opportunities for unstructured play and a more profound sensory experience (Moll et al., 2022).

Teachers who incorporate nature pedagogy in their teaching help children develop lifelong learning skills by fostering curiosity, encouraging questions, and supporting creative problem-solving (Jacobi-Vessels, 2013; Speldewinde et al., 2023). To support children's holistic and experiential learning, environmental pedagogy emphasizes experience and reconnection with nature through activities such as nature journaling (Tsevreni, 2020). Such activities help children develop a deeper understanding and appreciation of the natural world and promote sensory engagement and a sense of connectedness (Hu, 2022; Simsar, 2021).

SIGNIFICANCE OF NATURE PEDAGOGY

Teachers can employ various child nature connectedness approaches to integrate nature into their lesson. Globally, countries have adopted techniques such as free and thematic play in the nature, nature journaling, and the 3H's technique (Inan & Inan, 2015) e.g. bamboo schools (Hu, 2022) in Canada, and forest schools in various European nations. In Turkey, activity-based learning, known as the 3Hs approach, encourages hands-on, heads-on, and hearts-on engagement in science education (Inan & Inan, 2015). These approaches aim to enhance nature interaction and deepen ecological understanding and values. Curriculum integration, emphasizing the transformative potential of journaling, inquiry-based learning, and free play has also been encouraged (Hu, 2022).

Therefore, this booklet has been put together for teachers and parents who are interested in nature pedagogy. We hope that you will use it and provide feedback to our team.



INTRODUCTION

This booklet comprises of ten lesson plans designed as part of an action research intervention conducted in a suburban school in Karachi, Pakistan. As these lessons were adapted and implemented in real classrooms, we believe that they will benefit a wider teaching and learning community, fostering a stronger connection with the natural environment.

The lessons have been developed on the 3P model: presentation, practice, and production. In presentation, new concepts and skills are introduced through various instructional methods, such as lectures, demonstrations, or multimedia presentations. In practice, students engage in activities and exercises to reinforce their understanding and apply newly acquired knowledge. Finally, in production, students demonstrate their mastery of the subject matter by independently applying what they have learnt, often through projects, presentations, or real-world applications. This comprehensive approach ensures a well-rounded and effective learning experience.

Summary of the lessons: Please note that most of these lessons can be extended over days as the concepts can not be taught in a short time allocated in one day. It is therefore clear that the activities are not time bound.

Lesson 1: Environment Badges

This activity starts on the first day and could continue throughout the year (daily or weekly). The teacher shares the benefits of good practices to conserve nature. Badges prepared for best-performing students. The teacher awards the badges at the end of the day/week, and collects the badges back when needed.

Lesson 2: Biodiversity Walk

This activity aims to develop a caring attitude towards life around them. Students are allowed to explore, observe and interact with the animals.

INTRODUCTION

Lesson 3: Scavenger Hunt

The teacher allows students to explore the outdoor environment and find a specific number of objects. Students are sent in groups for collaboration and teamwork.

Lesson 4: Pattern Hunt

The teacher prepares the lesson by identifying the patterns in nature and encourages them to create their own patterns.

Lesson 5: Insect Hunt

This is an activity about finding insects in the schoolyard. To make it more interesting, the teacher provides a magnifying glass. Students are encouraged to be patient when getting their turn. For meaningful interaction, students are allowed to talk with each other and find more and more insects and observe them without harming them.

Lesson 6: Living and Non-living objects

The teacher allows students to manipulate and interact with nature around them. The teacher allows them to run, search and find objects in the environment.

Lesson 7: Natural resources and their uses

Students need to develop an understanding of natural resources and services to appreciate the natural capital.

Lesson 8: Art with Nature

With the help of loose parts of nature, students will create artwork of their interest. The A teacher may give them hints about making a house, train or other objects that students can make.

Lesson 9: Sit Spot Journaling

The teacher assigns places that are quiet with no chance of distraction. Students are allowed to write in the outdoors.

Lesson 10: Trees have feelings

The teacher tells the story about a tree and takes the students into the schoolyard. The teacher then leads the students in activities to count the real trees in the garden, including big and small trees, observing the color of the trees, and discussing what the trees are used for.

INTRODUCTION

The overarching theme of the booklet aligns with one of the core competencies outlined in the national curriculum (NC) of Pakistan, specifically, the world around us. The lessons were strategically planned in accordance with the areas recommended by the NC.

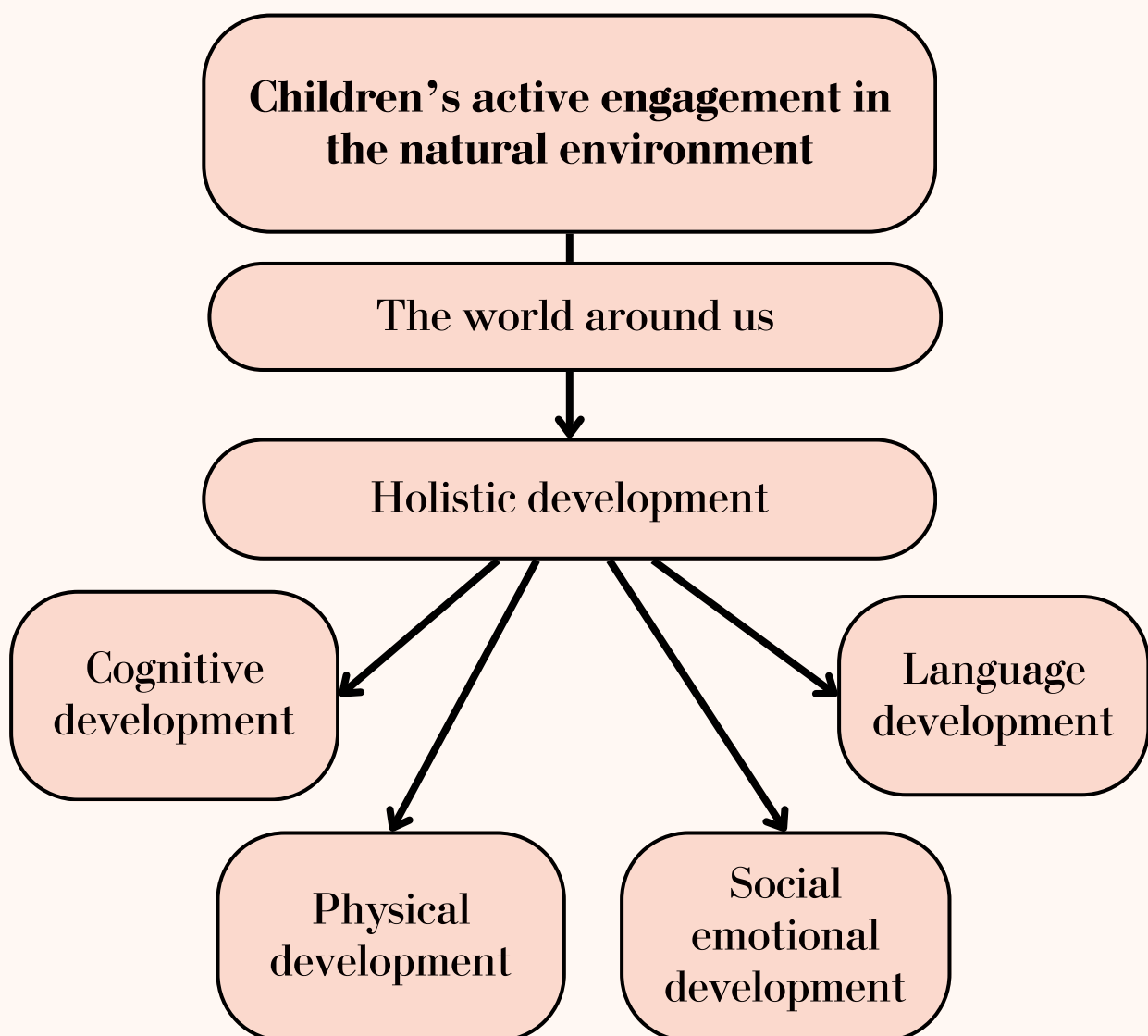


Figure 1: Core competencies in national curriculum

LESSON 1: ENVIRONMENT BADGES



SUGGESTED GRADE: ECED

REQUIREMENT: BADGES MADE WITH
CARDBOARD

LEARNING OBJECTIVES

- Cultivating a sense of environmental ownership in order to protect it
- Equipping individuals for active participation in environmental conservation

PRESENTATION

The teacher can demonstrate positive habits that demonstrate care and protection of the environment, such as switching off lights after leaving the room, minimizing food waste, opting to walk to school, and responsibly closing water taps after use.

PRACTICE

The teacher can provide students with materials such as pictures illustrating good practices, cardboard, scissors, and glue sticks to create the badges. Students can be helped during the activity, and they can be encouraged to suggest titles for the badges.

PRODUCTION

The teacher can display the cards in different areas of the class and organize a gallery walk/tour. The students can then move about, discussing the actions they will take to protect the environment.

EXTENSION ACTIVITY

The badges can be awarded to students who meet specific criteria, such as walking to school for an entire day or a week. Students can earn badges for their exemplary environmental practices, such as closing water taps after use, turning off lights when leaving a room, opting to walk instead of using transportation, and properly disposing of trash in waste bins. They can also be rewarded for not wasting food and saving all natural resources.

The badges can have titles such as water steward, wastebuster or green hero. Students can take the badges home, and the next day, they can bring them back. The teacher can then observe the students again to ensure continued good practices. A log can be maintained that will recognise the best students on annual days.

Note: Walking should only be encouraged among students if it is safe (and never without adult supervision). Otherwise, the use of school transportation system can be encouraged. Students can be encouraged to self report or the teachers keep a log based on certain themes assigned each week or month.



LESSON 2: BIODIVERSITY WALK

SUGGESTED GRADE: ECED

REQUIREMENT: A NEARBY FARM TO VISIT

LEARNING OBJECTIVES

- To learn about different animal habitats
- To cultivate an understanding of and respect for animals (and plants), emphasizing care and consideration

PRESENTATION

Test Previous Knowledge/Brainstorming

Students can be prompted to share information about the animals they have in their homes or encounter in their surroundings. The teacher can inquire about their food, habitats, and body parts, initiating a discussion on how our planet serves as a shared home for various species.

The teacher can then present pictures/ e-pictures of animals, providing their names and habitats. This can lead to a conversation about wild animals inhabiting forests and domesticated animals kept as pets, such as cats, dogs, and parrots. Additionally, there can be a discussion about farm animals, including cows, goats, sheep, and hens, which provide us with milk, meat, and eggs. Furthermore, the use of animal wool and skin to make clothing and shoes can be explored.

PRACTICE

The teacher can guide students to a nearby farm or natural space, encouraging them to explore and discuss the animals found there. The teacher can also discuss the benefits of these animals, fostering an appreciation of their role in the environment. Students can be motivated to observe the animals in their natural habitat, and pictures/photographs can be taken during the visit. On the following day, these pictures can be displayed on the wall.

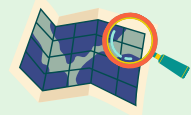
Note: In case of lack of availability, animal models or pictures can be used and students can be asked to put them in certain habitats.

PRODUCTION

After returning from the walk, the teacher can initiate a discussion of animals. Students can be asked to share their thoughts about the animals they liked during the visit. Depending on their level of understanding, a discussion on domestication can also be conducted. The concept of whether animals should be kept in captivity can also be explored. After this activity the teacher can develop a checklist of dos and don'ts and display it in the class room and hallways for display in order to reinforce the values of caring for the animals.



LESSON 3: SCAVENGER HUNT



SUGGESTED GRADE: ECED

REQUIREMENT: PEBBLES, TWIGS, LEAVES, DRIED FLOWERS AND GRASS, STONES, STICKS, BASKETS FOR STORING OBJECTS, AND SEEDS.

LEARNING OBJECTIVES

- To develop critical thinking, problem-solving, communication and teamwork.
- To enhance vocabulary proficiency for objects in nature
- To appreciate the rhythm found in nature

PRESENTATION

The teacher can introduce the activity by announcing the listed materials to be found, such as a large leaf, two small pebbles, five twigs, a circle-shaped object, an orange object, and an item that is harmful to the environment.

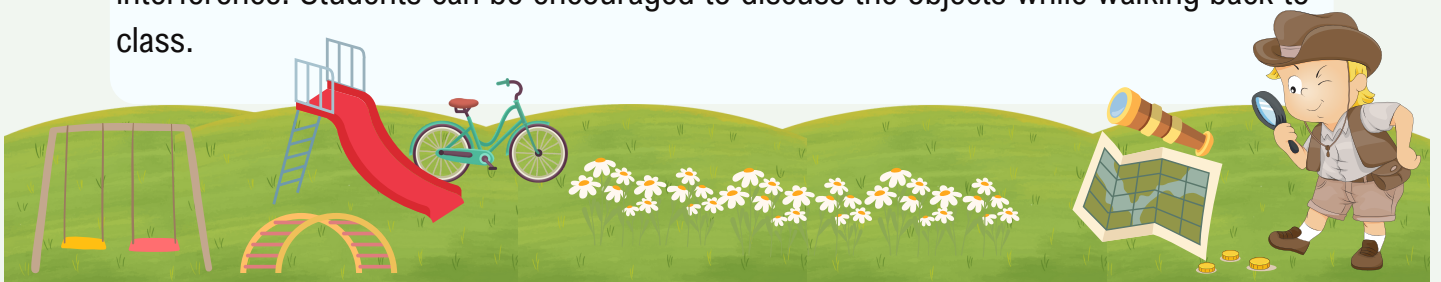
The teacher can instruct students to observe the class and identify an object with a circular shape. To assess their understanding, students can be asked about various objects, such as a red, orange, or green item, a leaf, a book, and so on.

PRACTICE

The teacher can take the students to the schoolyard, where they will be divided into groups. Group one can be tasked with collecting as many large leaves as possible, group two with finding two small pebbles per member, group three with gathering 25 twigs (five each), group four with collecting five circle-shaped objects, and group six with gathering objects of orange, blue, or red color. Additionally, another group can search for items they believe are harmful to the planet, such as plastic waste.

PRODUCTION

The teacher can assess and assist the students during the hunt with minimal interference. Students can be encouraged to discuss the objects while walking back to class.



LESSON 4: PATTERN HUNT

SUGGESTED GRADE: ECED

REQUIREMENT: MATERIAL IN THE SCHOOLYARD:
TREES, STONES, PLANTS,
FLOWERS, ETC.

LEARNING OBJECTIVES

- To enhance students' ability to create patterns
- To enhance their self-confidence and observation skills.

PRESENTATION

The teacher can take the students outside the classroom, gathering them in large groups in the garden. The teacher can bring objects such as pebbles of different sizes, sticks, dried flowers, and leaves. After introducing the topic, the teacher can create patterns using stones and sticks or by incorporating variations in the sizes of stones. Additionally, the teacher can form patterns resembling trees in the garden if there are both big and small trees present.

PRACTICE

Students can be instructed to explore the schoolyard, search for, and bring additional objects to create patterns in pairs. This activity fosters collaboration, as students are encouraged to assist each other in completing the patterns.

PRODUCTION

Students can use the collected objects to create a pattern of their choice and then present it to the class.





LESSON 5: INSCET HUNT

SUGGESTED GRADE: ECED

REQUIREMENT: SCHOOL GARDEN, DEAD INSECTS, MAGNIFYING GLASS, PLAYGROUND

LEARNING OBJECTIVES

- Students will learn about insects
- Students will cultivate empathy for living creatures

PRESENTATION

The teacher can discuss insects by presenting preserved specimens (collected in a jar or borrowed from a biology laboratory in school). The teacher can encourage the students to observe the insects and identify their body parts. Additionally, the teacher can discuss the life of insects and their role in the environment. Students can be prompted to search for insects in their surroundings and observe them without harming them.

PRACTICE

After introducing the topic, the teacher can lead the students outside the classroom to explore and identify insects using a magnifying glass. Students can be encouraged to share the names of the discovered insects in their native language. Each student can be provided with a magnifying glass to examine small insects and observe their body parts.

PRODUCTION

Students can be given a worksheet activity involving matching the halves of insect body parts. Following this, they can be invited to participate in a discussion about the physiology of insects and their role in the environment.

EXTENSION ACTIVITY

At this point in time, music and movement can be added in the activity for example there are many poems focusing on ants, butterfly, lady bird etc. children will enjoy singing songs and making movements in the nature.

Art can also be integrated here by providing children with paper and pencils to draw and color the creatures they observed in the nature. The children can be engaged to develop and display a checklist of dos and don't's with tiny creatures.





LESSON 6: LIVING AND NONLIVING OBJECTS

SUGGESTED GRADE: ECED

REQUIREMENT: INDOOR AND OUTDOOR ENVIRONMENT

LEARNING OBJECTIVES

- To learn about the living and nonliving things in nature and
- To be able to differentiate between living and nonliving things.
- To develop an appreciation for nature

PRESENTATION

Test previous knowledge/ Brainstorming:

The teacher can ask questions related to the topic, such as:

- What defines something as alive?
- Why doesn't the table move on its own?
- Do all living things exhibit movement?
- Do plants move?

PRACTICE

Define: The teacher can start by introducing living and non-living objects. They will explain things that grow, move, eat, and breathe are called living things, while things that do not grow, cannot move by themselves, and do not eat or drink are considered non-living things.

Relate:

- The teacher can use examples from classroom objects, for instance: “Look at the table; it does not grow, eat, drink, or inhale. We need to move it from one place to another. The chair, fan, book, and pencil are all non-living things”.
- Then the teacher can explain living objects; for example, students, animals, and plants are considered living things as they grow and move. Trees can also be discussed.

PRODUCTION

The teacher can divide the students into two groups. They can create a display shelf of objects in the classroom and ask each group to visit the other group's display, identifying commonalities and differences. Further discussion can also revolve around how the shelves look and the items displayed on them.



Note: This theme can be taught for several days outdoors with the help of movements.

LESSON 7: NATURAL RESOURCES



SUGGESTED GRADE: ECED

REQUIREMENT: NATURAL RESOURCES E.G.,
WATER, SOIL, TREES, PLANTS

LEARNING OBJECTIVES

- To identify and appreciate natural resources: air, water, soil, trees, metals, soil, plants, and stones.
- To be conscious of their benefits and use them wisely

PRESENTATION

Test Previous Knowledge Test/Brainstorming:

- What makes our earth?
- Do we receive any benefits from nature?
- Can you think about the value of air, water, and soil? What do we receive from it?
- What resources can we obtain through animals and plants?

The teacher can take the students outside to show them the soil, water, trees, and stones, emphasizing that these natural resources are freely available for our use, e.g., using water for washing, cleaning, drinking and growing food.

The teacher can also share the benefits of soil and plants. Plants serve various purposes; vegetables have several health benefits. Plants and trees contribute to making clothes and papers. Additionally, the wood from trees is used to make furniture. Trees play a crucial role in absorbing carbon dioxide and releasing oxygen, which is essential for our breathing.

PRACTICE

The teacher can take the students to different areas in the school, such as under the tree and near the tap, showcasing soil and metal-made objects. Students will be given time to manipulate and discuss with each other.

The teacher can introduce a Bingo game, prompting students to find items used for specific purposes. For example: find the thing that is used to make paper. find a natural resource that is used to wash hands, where do plants grow. Similarly, for air e.g. air breathing exercises can be used and a discussion about air quality can be carried.

PRODUCTION

The teacher can ask various questions such as what is used to make a lock, pencil, and clothes. Students can be given worksheets to match natural objects with the final products.

LESSON 8: ART WITH NATURE



SUGGESTED GRADE: ECED

REQUIREMENT: DRIED LEAVES, PEBBLES, TWIGS, MULCH, STICKS, DRIED FLOWERS, SOIL, SAND, BRANCHES, FLOWER, VEGETABLES AND FRUIT SEEDS, SAND, SEA SHELLS ETC.

LEARNING OBJECTIVES

- Critical thinking to develop creativity, problem solving and fine motor development
- To nurture self confidence

PRESENTATION

The teacher can bring small objects from the environment, for instance: dried leaves, twigs, and pebbles. Students can use these materials to construct a house or a square shape by joining twigs or sticks together. The teacher can then inquire about the number of sticks used to create the structure. Subsequently, students can be encouraged to bring small objects from the environment to craft whatever they like.

PRACTICE

Students can be asked to create things using objects in the schoolyard. They can be provided with baskets containing various natural loose parts or encouraged to gather materials themselves by exploring nature. Students should have/be given time to develop their artwork, and the teacher can offer assistance to those who may encounter challenges in initiating the activity.

to engage children in reflective thinking questions like these can be asked

1. what if water disappears from the earth?
2. what if there was no clean air left?
3. what if all plants are cut down?
4. what if there was no soil? etc.

These questions can be asked separately over a longer period of time.

PRODUCTION

After completion, students can present their art activity in class. Children can then be given another task to create artwork using objects from their home garden.



LESSON 9: SIT SPOT JOURNALING

SUGGESTED GRADE: ECED

REQUIREMENT: BLANK PAPERS, PENCILS, COLOURED PENCILS, AND A SPECIFIC CORNER FOR EACH GROUP IN THE SCHOOL GARDEN

LEARNING OBJECTIVES

- To improve their observation of the natural environment
- To improve their observation through drawing natural environment

PRESENTATION

The teacher can take the students out and ask about their favorite places. They can then be allowed to sit in a specific spot and observe their surroundings. Students can be encouraged to choose an object and draw it on paper as they prefer. To promote independent thinking, students can be advised to work in silence.

PRACTICE

Students can be divided into three groups for space allocation. Each group can be assigned a specific outdoor area to sit in. The students then sit in their assigned areas for a designated time to observe their surroundings and draw whatever they see. They can be encouraged to draw as many objects as they can.

PRODUCTION

- The teacher can gather the students in a large circle and ask them to present their drawings.
- Later, the teacher can ask the students to display their work on the wall.



LESSON 10: TREES HAVE FEELINGS

SUGGESTED GRADE: ECED

REQUIREMENT: STORY OF DEFORESTATION, OUTDOOR ENVIRONMENT (SCHOOLGARDEN) HAVING TREES AND PLANTS

LEARNING OBJECTIVES

- To learn about activities that can contribute to a positive relationship with the environment and encourage them to practice it.
- To develop empathy for all life forms

PRESENTATION

Test Previous Knowledge/Brainstorming:

The teacher can discuss the story “Trees have feelings” from the climate change and environmental; sustainability module*.

The teacher can invite the students to look at the trees around them and describe each tree they observed. The teacher can then read the conversation between the tree and a child. The teacher can then point to a bench and ask what it is made of, questioning whether it is good to cut down a tree. The teacher can explain that a tree is a living thing; it can grow, give us fruit, and its wood is used to make furniture and other wood products. The teacher can ask questions during and after the story and emphasize the importance of saving trees and nature. They can also discuss the benefits of a tree. Additionally, they can delve into the vocabulary related to the story, such as garden, trees, leaves, bench, grass, etc.

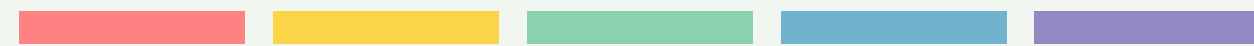
PRACTICE

The teacher can ask the students to act out action verbs such as cutting, watering, trimming, and plucking leaves of trees. The teacher can then prompt the students to choose the actions that are beneficial to protect the trees.

PRODUCTION

- Students can be asked a few questions about the whole story:
- How to take care of the trees?
- After the storytelling, students can be asked a few questions about the whole story:
- How valuable are the trees?
- What did you learn from the story?
- Can you narrate this story when you go home?





ANNEXE

RESOURCE SHEET EXAMPLES



LESSON 1 : ENVIRONMENT BADGES

RESOURCE SHEET (IDEAS)



LESSON 2 : BIODIVERSITY WALK

RESOURCE SHEET (IDEAS)

Let's Learn the name of each animal in English, Urdu and your native language

Animal	Names		
	English	Urdu	Native language
	English	Urdu	Native language
	English	Urdu	Native language
	English	Urdu	Native language
	English	Urdu	Native language

LESSON 3-4 : SCAVENGER/PATTERN HUNT

RESOURCE SHEET (IDEAS)

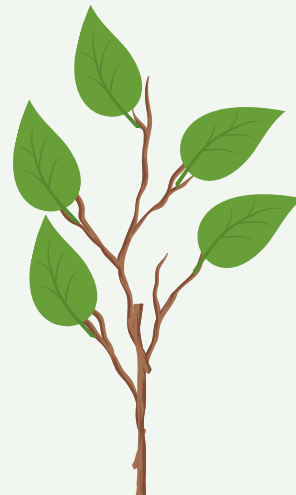
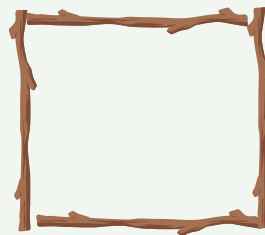
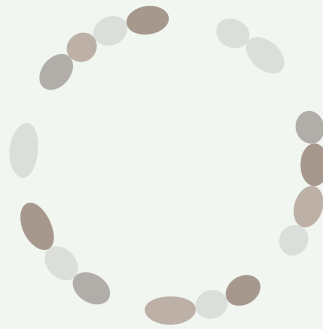
Create a design with natural objects after hunting them

Note: do not harm trees, use twigs and leaves already lying on the ground

MATERIAL



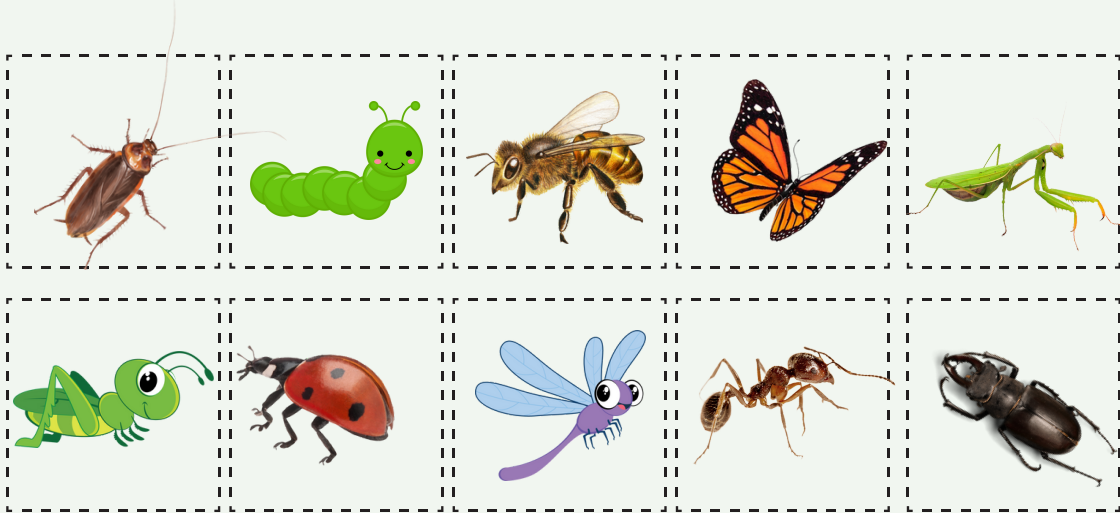
DESIGN



LESSON 5: INSECT HUNT

RESOURCE SHEET (IDEAS)

Sort Insect based on the description in the box



**insect that are
useful**

**insect that aren't
useful**

**insect that can
fly**

**insect that can't
fly**

[Empty dashed box for sorting]


[Empty dashed box for sorting]

[Empty dashed box for sorting]

[Empty dashed box for sorting]

Go on a walk and draw/describe the insect that you saw

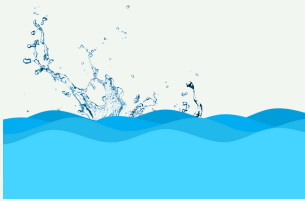
[Large dashed box for drawing/description]



LESSON 7: NATURAL RESOURCES

RESOURCE SHEET (IDEAS)

Discuss the uses of various natural resources






LESSON 8-9: ART IN NATURE



RESOURCE SHEET (IDEAS)

Observe the world around you and draw in detail











LESSON 5: INSECT HUNT

RESOURCE SHEET (IDEAS)

Count and write your answers in the boxes below



	<input type="text"/>		<input type="text"/>		<input type="text"/>		<input type="text"/>
	<input type="text"/>		<input type="text"/>		<input type="text"/>		<input type="text"/>

Source for this sheet: canva

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