Nature Exploration

Mid-Valley
STEM-CTE HUB

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Nature Exploration

The Nature Exploration Kit encourages students to investigate the natural world through observation, collection, and scientific inquiry. Using nets, magnifying glasses, observation containers, and collection tools, students explore local habitats and examine plants, rocks, and other natural materials up close. Through hands-on investigations, students develop observation skills, practice asking scientific questions, and build an understanding of biodiversity and ecosystems. Designed to support outdoor learning while introducing the tools and techniques used by field scientists and naturalists.

Grade Level

2nd -5th

Group Size

Groups of 2 - 3

Time Duration

30 - 90 minutes

Content of Kits

Components

- 1 observation container
- 15 small mesh nets
- 15 magnifying glasses
- 2 Plant Presses w/ Paper
- Plastic vials with lids
- Specimen envelopes

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Usage

Getting Started

1. **Inventory and Organize Materials**
Begin by unpacking the kit and confirming that all observation containers, nets, magnifying glasses, vials, and specimen envelopes are present and in good condition. Organizing materials by student teams before heading outside will make activities run more smoothly.

2. **Establish Collection Expectations**
Discuss expectations for collecting and observing natural materials responsibly. Encourage students to observe first, collect only when necessary, and return living organisms to their habitats after investigations are complete.

3. **Explore the Observation Tools**
Take time to familiarize students with the magnifying glasses, observation container, specimen vials, and nets. Demonstrating how to use each tool properly will help students make detailed observations and protect collected specimens.

4. **Prepare Observation and Recording Methods**
Decide how students will record observations, sketches, questions, and discoveries during their investigations. Science notebooks, data sheets, or nature journals can help students organize their findings and support future discussions.

Storage

- **Clean and Dry Materials Before Storage**

After use, remove any dirt, leaves, or debris from the nets, observation container, magnifying glasses, vials, and specimen envelopes. Allow all materials to dry completely before returning them to the kit to prevent mold, mildew, or damage.

- **Keep Small Components Organized**

Store magnifying glasses, vials, specimen envelopes, and other small components in their designated locations within the kit. Keeping materials organized makes setup easier and helps ensure all pieces are available for future investigations.

Troubleshooting

- **Students Are Having Difficulty Finding Specimens**

If students are struggling to locate insects or other natural materials, encourage them to look under logs, near plants, beneath rocks, or in shaded areas where organisms often seek shelter. Slowing down and spending time observing one area carefully often leads to more discoveries.

- **Specimens Are Difficult to Observe**

If students cannot clearly see details, encourage them to move specimens into the observation container or use the folding magnifying glasses in brighter lighting conditions. Rotating the specimen or changing viewing angles can also reveal additional features.

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Activity Guide

Beginner

Backyard Biodiversity Survey
Students investigate the variety of living things found in a schoolyard, park, or outdoor learning space by collecting and observing specimens and recording evidence of biodiversity.

Oregon Science Standards Alignment
3-LS4-3 & 4-LS1-1

Procedure
1. Students work in teams of 2–3 to explore a designated outdoor area.
2. Collect or observe insects, leaves, seeds, rocks, and other natural objects.
3. Use magnifying glasses to examine details and characteristics.
4. Record observations through sketches, notes, and counts of different organisms.
5. Share findings and compare biodiversity between locations.

Intermediate

Leaf Detectives
Students investigate plant structures and adaptations by collecting and comparing leaves from different plants in their local environment. Students observe patterns in shape, texture, color, and size and consider how these features help plants survive.

Oregon Science Standards Alignment
4-LS1-1 & 3-LS3-2

Procedure
1. Students work in teams of 2–3 to collect fallen leaves or observe leaves from a variety of plants.
2. Use magnifying glasses to examine leaf veins, edges, textures, and colors.
3. Record observations and create sketches of each specimen.
4. Compare characteristics among leaves and sort them into groups based on shared traits.
5. Discuss how different leaf structures may help plants gather sunlight, conserve water, or survive in their environment.

Advanced

Microhabitat Mystery
Students compare different microhabitats to determine how environmental conditions influence the organisms found there.

Oregon Science Standards Alignment
3-LS4-3 & 5-LS2-1

Procedure
1. Assign teams to investigate different habitats such as grass, under logs, garden beds, or near trees.
2. Record the types and numbers of organisms observed in each location.
3. Compare findings across habitats.
4. Identify patterns and discuss why certain organisms prefer certain environments.
5. Construct explanations supported by evidence from the investigation.

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Learning Extensions

STEAM Connections: Science

Learning Objectives:

- Develop observation skills by identifying and describing patterns, structures, and characteristics found in nature.
- Collect, record, and communicate scientific observations using drawings, notes, and simple data collection tools.
- Compare and contrast living and nonliving components of local ecosystems.
- Investigate how plants and animals use structures and behaviors to survive in their environments.
- Explore biodiversity by identifying similarities and differences among organisms and natural materials.
- Ask scientific questions and use evidence from observations to construct explanations about the natural world.

Career Connections:

- **Ecologist –** Investigates relationships between organisms and their environments.
- **Wildlife Biologist –** Studies animals, their habitats, and population health.
- **Park Ranger –** Protects natural spaces and educates visitors about local ecosystems.
- **Forester –** Manages forests and studies tree health and habitat conditions.
- **Environmental Scientist –** Monitors environmental conditions and develops solutions to environmental challenges.
- **Botanist –** Studies plants, their structures, and how they interact with ecosystems.
- **Science Educator –** Helps students explore and understand the natural world through hands-on learning.

Essential Employability Skills:

- Observation and Attention to Detail
- Communication
- Critical Thinking
- Collaboration
- Problem Solving
- Curiosity and Initiative
- Environmental Stewardship

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Resources and Accessibility

Safety Guidelines

- **Practice Safe Outdoor Exploration**

Students should remain within designated investigation areas and be aware of uneven ground, roots, rocks, and other natural hazards. Adult supervision is recommended during all outdoor activities.

- **Handle Natural Materials Responsibly**

Students should avoid touching unknown plants, fungi, or animals with their bare hands and wash their hands after outdoor investigations. All living organisms should be handled gently and returned to their habitats as quickly as possible.

Accessibility

- **Provide Multiple Ways to Participate**

Students can contribute by collecting specimens, making observations, sketching findings, recording data, photographing discoveries, or organizing materials. Offering a variety of roles allows all students to participate meaningfully in investigations.

- **Use Multiple Methods of Observation**

Support learners with magnifying tools, hands-on exploration, verbal descriptions, visual references, and collaborative discussions. Allowing students to share observations through drawing, writing, speaking, or photography helps make activities accessible to diverse learners.

Library Catalog

Library Resources

Feedback

QR to feedback survey