KEEN Nature Academy

Nature Exploration & Outdoor Learning Program for Ages 8-11

Program Overview

KEEN Nature Academy is a hands-on, year-long nature exploration program for children ages 8–11. Meeting weekly on Tuesdays from 9:00–11:30 AM, Nature Academy gives young people the opportunity to spend consistent, meaningful time outdoors while developing curiosity, confidence, observation skills, and a lasting connection to the natural world.

Based at the Yakima Canyon Interpretive Center and Pond to Pines Outdoor Learning Campus, Nature Academy uses the canyon, shrub-steppe, wetlands, ponds, trails, and surrounding landscapes as a living classroom.

Rather than treating each week as a stand-alone nature lesson, Nature Academy is organized around three long-term, interconnected projects that unfold throughout the school year. Each season brings new opportunities to explore plants, animals, weather, habitats, and the changing landscape.

Through these projects, children will learn to slow down, notice the details around them, ask questions, make discoveries, and develop a sense of belonging in the natural world.

Nature Academy is designed to help children build the foundation for a lifelong relationship with nature. As students grow, they can continue their journey through KEEN Outdoor Fridays, EcoExplorers, Adventure Club, stewardship projects, summer camps, and specialized outdoor experiences.

Long-Term Project 1

The Seasons of the Canyon

Discovering How Nature Changes Throughout the Year

The **Seasons of the Canyon** project invites students to become careful observers of the natural world.

Throughout the year, students will return to the same places at YCIC and observe how the landscape changes from fall to winter, winter to spring, and spring into summer. By revisiting familiar places, students will begin to recognize seasonal patterns and understand that nature is always changing.

The project encourages children to develop the habit of **noticing**—looking closely at what is happening around them and asking questions about why those changes occur.

Students will explore:

- Seasonal changes in plants and animals
- Weather and changing conditions
- Daylight and seasonal cycles
- Plant growth and dormancy
- Animal behavior throughout the seasons
- Migration and seasonal movement
- Signs of spring
- Seasonal changes in wetlands and ponds
- How people experience and adapt to the seasons

Hands-on activities may include:

- Seasonal nature journaling
- Phenology observations
- Nature walks
- Weather observations
- Tracking seasonal changes in plants

- Observing animal behavior
- Exploring seasonal colors, textures, and sounds
- Creating seasonal maps
- Comparing the same location throughout the year

Project Outcome

Each student will create a **Nature Academy Seasonal Field Journal** documenting their observations and discoveries throughout the year.

The journal may include:

- Drawings
- Nature observations
- Questions
- Weather records
- Plant and animal discoveries
- Poems and creative writing
- Maps
- Collections of natural observations

By the end of the year, students will have created a personal record of how the canyon changed through the seasons.

The goal is to help children understand that **knowing a place comes from returning to it again and again**.

Long-Term Project 2

🦋 The Nature Neighbors Project

Getting to Know the Plants and Animals Around Us

The **Nature Neighbors Project** introduces students to the plants and animals that share the Yakima Canyon with us.

Rather than focusing on memorizing long lists of species, students will learn to recognize common plants and animals by observing their characteristics, behaviors, habitats, and signs.

Students will gradually build their knowledge of the living community around them and begin to understand the relationships between plants, animals, and habitats.

Students will explore:

- Native plants
- Shrub-steppe vegetation
- Wildflowers
- Trees and shrubs
- Birds
- Mammals
- Reptiles
- Amphibians
- Insects and pollinators
- Tracks and wildlife signs
- Food webs and animal relationships

Hands-on activities may include:

- Nature scavenger hunts
- Bird watching
- Wildlife observation
- Track and sign identification

- Plant identification
- Pollinator observation
- Nature sketching
- Habitat exploration
- Wildlife listening activities
- Simple species surveys

Students will learn how to use:

- Field guides
- Magnifying glasses
- Binoculars
- Nature journals
- Identification tools
- Simple observation equipment

Project Outcome

Together, the students will create a **KEEN Nature Academy Nature Neighbors Guide** featuring the plants, animals, insects, and other organisms they encounter throughout the year.

Students may contribute:

- Drawings
- Photos
- Species observations
- Fun facts
- Habitat information
- Animal tracks and signs
- Seasonal observations

The guide will grow as students make new discoveries.

The project helps children understand that the canyon is not simply a beautiful place to visit—it is a **home shared by an incredible diversity of living things**.

Long-Term Project 3

🧭 The Young Naturalist Project

Learning to Explore, Observe, and Care for Nature

The **Young Naturalist Project** brings together the skills and experiences students develop throughout Nature Academy.

Students will learn the basic tools of being a naturalist: how to move through a landscape with awareness, how to observe carefully, how to ask questions, how to investigate what they find, and how to care for the places they explore.

This project is designed to build **confidence and independence outdoors** while helping children develop a sense of stewardship.

Students will explore:

- What it means to be a naturalist
- How to observe without disturbing
- Nature ethics and Leave No Trace
- Caring for plants and wildlife
- Basic outdoor safety
- Navigation and orientation
- Weather awareness
- Outdoor exploration skills
- Nature-based problem-solving
- The role of people in caring for ecosystems

Hands-on activities may include:

- Nature observation challenges
- Map and compass basics
- Orienteering
- Shelter building
- Outdoor games

- Nature-based art
- Leave No Trace activities
- Habitat care projects
- Simple stewardship activities
- Guided exploration
- Independent nature observation

Students will be encouraged to develop their own questions about the natural world and investigate them through observation and exploration.

Project Outcome

Each student will complete a **Young Naturalist Portfolio** documenting their growth throughout the year.

The portfolio may include:

- Favorite discoveries
- Nature journal entries
- Maps
- Species observations
- Outdoor skills learned
- Nature-based artwork
- Personal questions and investigations
- Stewardship activities
- Reflections on their relationship with nature

At the end of the year, students will be invited to reflect on how their understanding of the natural world has changed.

The goal is for every student to leave Nature Academy feeling:

I know how to explore.
I know how to observe.
I know how to care for nature.
I belong here.

The Three Projects Working Together

The power of Nature Academy comes from the way these three projects connect.

🌿 The Seasons of the Canyon

We learn to notice change.

↓

🦋 The Nature Neighbors Project

We learn to recognize and understand the living world.

↓

🧭 The Young Naturalist Project

We learn how to explore responsibly and care for the places we love.

Together, the projects create a progression from **observation to connection to stewardship**.

Students learn to ask:

> **What do I notice?**

Then:

> **What is happening here?**

Then:

> **Who else lives here?**

And finally:

> **How can I be a good neighbor to the natural world?**

This approach allows children to develop nature literacy, outdoor confidence, curiosity, and a sense of belonging without turning every experience into a formal academic lesson.

Year-End Nature Academy Celebration

At the conclusion of the program year, students will bring their experiences together for a **Nature Academy Celebration**.

Students may share:

- Their seasonal field journals
- Nature Neighbors Guide contributions
- Young Naturalist Portfolios
- Favorite discoveries
- Nature artwork
- Maps and observations
- Stories from their outdoor adventures
- Stewardship activities

Families may be invited to join students for a special nature experience at YCIC, where children can share what they have learned and show their families some of their favorite places to explore.

The celebration is an opportunity to recognize that the students have spent an entire year **getting to know a place**.

The Nature Academy Journey

Throughout the year, students move through a simple but powerful progression:

👀 NOTICE

Slow down and pay attention to the world around you.

🔍 DISCOVER

Ask questions and investigate what you find.

💚 CONNECT

Build relationships with places, plants, animals, and people.

🌱 CARE

Learn how your actions can help protect the natural world.

🌎 BELONG

Recognize that you are part of the ecosystem, too.

Through Nature Academy, children are not simply learning facts about nature.

They are learning how to know a place, how to feel at home outdoors, and how to become thoughtful stewards of the world around them.

The Nature Academy Promise

We explore with curiosity.
We observe with wonder.
We learn through experience.
We care for the places we visit.
We grow our connection to nature.

Program Implementation - First 4 Weeks

KEEN NATURE ACADEMY

Four-Week Instructor Packet

September Theme

CANYON ECOLOGY & FIELD SCIENCE

Ages

8–11

Schedule

Tuesdays | 9:00 AM–11:30 AM

Program Locatio

KEEN Outdoor Learning Campus / Yakima Canyon Interpretive Center site

Four-Week Essential Question

How can we become scientists who know, understand, and care for this place?

Program Philosophy

Know a place.
Study a place.
Love a place.
Care for a place.

Four-Week Learning Arc

Week 1: Observe → Ask
Week 2: Map → Understand
Week 3: Investigate → Collect Evidence
Week 4: Analyze → Act

PART 1

INSTRUCTOR OVERVIEW

The Three Year-Long Student Projects

The first four weeks launch three ongoing projects that should continue throughout the Nature Academy year.

1. Seasons of the Canyon

Students repeatedly observe the same places throughout the year and document seasonal change.

Students track:

- weather;
- temperature;
- plants;
- wildlife;
- water;
- seasonal changes;
- human activity.

End-of-year product: A student-created **Seasons of the Canyon Field Guide** or exhibit.

2. Nature Neighbors

Students learn about the species that share the KEEN site.

Students investigate:

- habitat;
- food;
- water;
- shelter;

- wildlife signs;
- seasonal behavior;
- relationships between species.

End-of-year product: A **Nature Neighbors Species Guide**.

3. Young Naturalist

Each student develops an individual question about the local environment.

Examples:

- Where do birds spend the most time?
- Which plants grow closest to water?
- Where do insects live?
- What animals leave tracks?
- How does the pond change?
- Where is biodiversity highest?

End-of-year product: A mini research project, field presentation, or student science symposium.

THE WEEKLY KEEN NATURE ACADEMY RHYTHM

Use this structure every Tuesday.

Time	Routine
9:00–9:15	What's Changed? / Sit Spot
9:15–9:30	Field Scientist Skill
9:30–10:30	Field Investigation
10:30–10:40	Snack / Water
10:40–11:15	Journal / Data / Analysis
11:15–11:30	Contribution / Closing Circle

The repeated structure is intentional.

Students should know:

> **We observe. We investigate. We document. We reflect. We contribute.**

PART 2

WEEK ONE LESSON PLAN

WEEK 1 — WELCOME TO THE CANYON

Big Question

What does it mean to be a scientist of a place?

Science Skill

Observation and questioning

ESE Focus

Ecological systems; human-environment relationships; stewardship

Student Outcomes

By the end of class, students can:

- distinguish observation from inference;
- make detailed observations using their senses;
- ask questions about the natural world;
- begin a field journal;
- identify something they want to investigate;
- describe one way people can care for a place.

MATERIALS

Instructor

- Field journals
- Clipboards

- Pencils
- Sit pads
- Site map
- First aid kit
- Weather thermometer
- Field Scientist Challenge Cards
- Magnifying glasses
- Hand lenses
- Trash bags
- Gloves
- Water

Student Materials

- Field journal
- Pencil
- Clipboard

9:00–9:15

NATURE WELCOME

Instructor Script

"Welcome to KEEN Nature Academy.

This year, you are going to become scientists.

But being a scientist doesn't just mean memorizing the names of plants and animals.

Scientists notice things.

Scientists ask questions.

Scientists collect evidence.

Scientists make mistakes.

Scientists change their minds when they discover new evidence.

And scientists share what they learn.

This year, we're going to become scientists of this place.

Before we learn anything about this place, we're going to practice the most important scientific skill of all:

Noticing."

Sit Spot

"Find a place where you can sit comfortably.

For the next five minutes, don't talk.

Don't try to identify anything.

Don't worry about getting the right answer.

Just notice.

Look.

Listen.

Smell.

Feel the air.

When you return, I want you to tell us one thing you noticed."

After five minutes:

"Who noticed something that someone else might have missed?"

9:15–9:30

FIELD SCIENTIST SKILL: OBSERVATION VS. INFERENCE

Instructor Script

"Scientists make observations.

An observation is something you can directly see, hear, smell, feel, or measure.

An inference is an idea you make based on what you observe.

For example:

'There are three birds in the tree.'

That's an observation.

'The birds are looking for food.'

That's an inference.

We don't actually know that yet.

Scientists have to be careful not to confuse what they **know** with what they **think**."

Quick Game

Read each statement.

Students show:

O = Observation

I = Inference

1. "The ground is wet."
2. "It rained last night."
3. "There are five birds."
4. "The birds are hungry."
5. "This plant has yellow flowers."

6. "The plant needs more water."

Ask:

"How could we find evidence to test our inference?"

9:30–10:30

CANYON DISCOVERY WALK

Give each student a **Field Scientist Challenge Card**.

Instructor Script

"Today you are going to explore like field scientists.

You don't have to know the name of everything you find.

In fact, I don't want you to worry about names today.

Your job is to notice.

Scientists often encounter things they can't immediately identify.

Instead of saying, 'I don't know,' scientists say:

'I wonder what this is.'

Let's see how many things we can find that make us curious."

Students complete the challenge card.

10:40–11:15

FIELD JOURNAL

Instructor Script

"Your field journal is going to become a record of your year at KEEN.

At the end of the year, you should be able to look through these pages and see how your thinking changed.

Today, draw a picture of this place.

It doesn't have to be perfect.

Scientists make field sketches to help them remember what they saw."

Students complete:

I Notice

I Wonder

I Think

I Want to Investigate

11:15–11:30

CONTRIBUTION

Instructor Script

"Scientists study places.

But at KEEN, we're not just studying this place.

We're part of it.

When we visit a place, we have a responsibility to leave it healthy—or healthier—than we found it."

Complete a 10-minute stewardship sweep.

Return to circle.

Ask:

> "What did you notice that this place needs?"

Record answers.

Do not immediately solve them.

Say:

"Those are questions for future Nature Academy scientists."

WEEK 1 ASSESSMENT

Instructor observes whether students can:

- make a direct observation;
- distinguish observation from inference;
- ask a relevant question;
- record observations;
- participate safely in field activities.

PART 3

WEEK TWO LESSON PLAN

WEEK 2 — MAPPING OUR PLACE

Big Question

How can scientists understand a place by mapping it?

Science Skill

Mapping and spatial observation

ESE Focus

Ecological systems; human-environment interactions

Student Outcomes

Students will:

- use basic map concepts;
- use cardinal directions;
- identify physical and biological features;
- create a simple habitat map;
- connect habitat features to animal needs.

MATERIALS

- Site maps
- Clipboards
- Pencils
- Colored pencils

- Compasses
- Measuring tapes
- Large butcher paper
- Markers
- Animal cards
- Field journals

9:00–9:15

WHAT'S CHANGED?

Return to the same sit spot.

Instructor Script

"Last week, you began studying this place.

Today we're going to ask a different question:

What has changed?

Scientists often return to the same place again and again.

Why?

Because one observation is a snapshot.

Repeated observations tell a story."

Students record:

- one thing that changed;
- one thing that stayed the same;
- one new question.

Add observations to the **Seasons of the Canyon** class chart.

9:15–9:30

MAP SKILLS

Instructor Script

"Scientists use maps to understand relationships.

A map tells us where things are.

But a really good map can also help us ask:

Why is something here?"

Introduce:

- north;
- south;
- east;
- west;
- symbols;
- map legend;
- landmarks;
- scale.

Challenge students:

"Point north."

"Where is the pond?"

"Where are we?"

"Where might you find water?"

9:30–10:30

CREATE OUR STUDY MAP

Divide students into teams.

Team 1 — Water

Find:

- pond;
- wet areas;
- drainage;
- water access.

Team 2 — Plants

Find:

- trees;
- shrubs;
- grasses;
- bare ground.

Team 3 — Wildlife

Find:

- tracks;
- scat;
- nests;
- feathers;
- burrows;
- animal sightings.

Team 4 — People

Find:

- trails;
- roads;
- buildings;
- signs;
- fences;
- evidence of human use.

Team 5 — Land

Find:

- slopes;
- rocks;
- low areas;
- high areas;
- exposed soil.

Combine maps into the **KEEN Nature Academy Master Study Map**.

10:40–11:15

HABITAT DETECTIVES

Instructor Script

"Imagine you're a wild animal.

You need four things:

Food.

Water.

Shelter.

Space.

Let's choose an animal that might live here.

Where would it find what it needs?"

Students choose a species.

They mark:

- food;
- water;
- shelter;
- space.

Ask:

> "What would happen if one of those things disappeared?"

11:15–11:30

CONTRIBUTION

Return to the master map.

Ask:

> "Where does this place need our attention?"

Create a list:

Our Place Needs...

This becomes a living stewardship list.

WEEK 2 ASSESSMENT

Students demonstrate:

- basic map skills;
- ability to identify habitat features;
- understanding of basic animal needs;
- ability to connect place and habitat.

PART 4

WEEK THREE LESSON PLAN

WEEK 3 — WHO LIVES HERE?

Big Question

How can scientists investigate biodiversity?

Science Skill

Data collection and classification

ESE Focus

Biodiversity; ecological systems

Student Outcomes

Students will:

- understand biodiversity as variety of life;
- conduct a simple biodiversity survey;
- collect standardized data;
- compare habitats;
- recognize that absence of evidence is not necessarily evidence of absence.

MATERIALS

- Field journals
- Biodiversity Survey Data Sheets
- Clipboards
- Hand lenses

- Binoculars
- Field guides
- Plant/animal ID cards
- Quadrat frames or hula hoops
- Pencils
- Measuring tapes

9:00–9:15

WHAT'S CHANGED?

Instructor Script

"We've now visited this place three times.

What have we learned that we could not have learned from one visit?"

Discuss repeated observations.

Add data to **Seasons of the Canyon**.

9:15–9:30

WHAT IS BIODIVERSITY?

Instructor Script

"Imagine two gardens.

Garden A has 100 plants—but they are all the same kind.

Garden B has 20 plants, five insects, three birds, and two kinds of trees.

Which garden has more biodiversity?"

Discuss.

"Scientists don't just ask how much life is here.

They ask:

How many different kinds of life are here?"

9:30–10:30

BIODIVERSITY SURVEY

Establish three study areas:

- Pond Edge
- Riparian Area
- Shrub-Steppe

Students record:

- plant types;
- birds;
- insects;
- animal signs;
- other organisms.

Students may record unknown organisms as:

- "small brown bird";
- "yellow flower";
- "three-legged insect"—though perhaps "six-legged insect" if observed;
- "unknown grass."

Instructor Script

"Today, accuracy is more important than knowing names.

If you don't know what something is, describe it.

Scientists don't make up answers.

They record what they actually observed."

10:40–11:15

DATA ANALYSIS

Create:

Habitat	Plants	Birds	Insects	Wildlife Signs
Pond Edge				
Riparian				
Shrub-Steppe				

Ask:

- Which habitat had the most observations?
- Which had the greatest variety?
- Why might that be?
- What do we need to investigate next?

11:15–11:30

YOUNG NATURALIST

Instructor Script

"Scientists often begin with a question they can't stop thinking about.

You've been observing this place for three weeks.

Now I want you to choose one question that you really want to investigate."

Students complete:

> I wonder...
>
> I think...
>
> I could find out by...

These questions become the starting point for the **Young Naturalist Project**.

WEEK 3 ASSESSMENT

Students demonstrate:

- ability to collect data;
- ability to describe observations;
- ability to compare two or more habitats;
- ability to generate an investigable question.

PART 5

WEEK FOUR LESSON PLAN

WEEK 4 — EVIDENCE & ACTION

Big Question

What can our evidence tell us, and how can we use what we learn to care for this place?

Science Skill

Evidence-based reasoning

ESE Focus

Sustainability; civic engagement; stewardship

Student Outcomes

Students will:

- conduct a focused investigation;
- collect evidence;
- make a claim;
- explain reasoning;
- communicate findings;
- identify a stewardship need;
- participate in a stewardship action.

MATERIALS

- Field journals
- Data sheets

- Clipboards
- Pencils
- Poster paper
- Markers
- Stewardship supplies
- Gloves
- Trash bags
- Appropriate restoration tools

9:00–9:15

WHAT'S CHANGED?

Instructor Script

"Look at your first field journal entry.

Now look at what you've learned.

What can you see now that you couldn't see four weeks ago?"

Discuss.

"That's what happens when you get to know a place."

9:15–9:30

CLAIM, EVIDENCE, REASONING

Write:

CLAIM

What do I think?

EVIDENCE

What did I observe?

REASONING

Why does my evidence support my idea?

Example:

> **Claim:** The pond edge supports many kinds of life.
>
> **Evidence:** We observed more kinds of plants, insects, and birds there.
>
> **Reasoning:** The pond provides water and different kinds of food and shelter.

9:30–10:15

FIELD INVESTIGATION

Groups choose:

A. Which habitat has the greatest biodiversity?

B. Where do we find the most wildlife evidence?

C. Where do we see the greatest human impact?

D. What makes a habitat valuable to wildlife?

Students collect evidence.

10:30–11:00

NATURE ACADEMY SCIENCE SYMPOSIUM

Each group presents:

1. Our question was...
2. We observed...
3. Our evidence suggests...
4. We think...
5. We still wonder...

11:00–11:20

STEWARDSHIP ACTION

Instructor Script

"During the past four weeks, you've been learning about this place.

Now you're going to do something for it.

Scientists don't just collect knowledge.

Knowledge can help us make better decisions."

Complete one small stewardship action.

11:20–11:30

CLOSING CIRCLE

Ask:

> "What do you know now that you didn't know four weeks ago?"
>
> "What do you still wonder?"
>
> "What is one thing you want to help care for?"

Celebrate students as:

KEEN FIELD SCIENTISTS

PART 6

PRINTABLE FIELD JOURNAL PAGES

These can be copied directly into a student field journal.

PAGE 1 — MY PLACE

MY KEEN FIELD JOURNAL

Name: _____

Date: _____

Today I am studying:

Draw this place.

[Large blank drawing space]

I Notice:

1. _____
2. _____
3. _____

I Wonder:

1. _____
2. _____
3. _____

PAGE 2 — SIT SPOT

MY SIT SPOT

Date: _____

Time: _____

Weather: _____

Temperature: _____

I can see:

_____

I can hear:

_____

I can smell:

_____

I can feel:

_____

Something that changed:

_____

Something that stayed the same:

_____

_____

PAGE 3 — OBSERVATION OR INFERENCE?

WHAT DO I REALLY KNOW?

My Observation

I observed:

_____

_____

My Inference

I think:

_____

_____

My Evidence

I think this because:

_____

_____

_____

PAGE 4 — MY MAP

MAPPING OUR PLACE

Draw a map of your study area.

Include:

□ Water

□ Plants

□ Trails

□ Wildlife signs

□ Human activity

□ Landforms

My map legend:

_____ = _____

_____ = _____

_____ = _____

PAGE 5 — NATURE NEIGHBOR

WHO LIVES HERE?

My Nature Neighbor:

It needs food:

It needs water:

It needs shelter:

It needs space:

I think it might live here because:

PAGE 6 — YOUNG NATURALIST

MY BIG QUESTION

I wonder:

I think:

I could find out by:

The evidence I would need is:

PART 7

STUDENT DATA SHEETS

SEASONS OF THE CANYON

Date Temperature Weather Plants Animals Water Changes

BIODIVERSITY SURVEY

Date: _____

Study Site: _____

What did we observe?	How many kinds?
Plants	
Birds	
Insects	
Mammals	
Tracks/signs	
Other	

Most interesting observation:

One question:

WILDLIFE EVIDENCE SURVEY

Evidence	Found?	Where?
Tracks	□	
Scat	□	
Feathers	□	
Burrow	□	
Nest	□	
Chewed plant	□	
Animal seen	□	
Other	□	

PART 8

FIELD SCIENTIST CHALLENGE CARDS

These should be printed, cut apart, and laminated.

FIELD SCIENTIST CHALLENGE

Find something:

ALIVE

Draw it.

FIELD SCIENTIST CHALLENGE

Find evidence that:

AN ANIMAL WAS HERE

What did you find?

FIELD SCIENTIST CHALLENGE

Find something:

THAT WAS ONCE ALIVE

How do you know?

FIELD SCIENTIST CHALLENGE

Find something:

YOU CANNOT IDENTIFY

Describe it without naming it.

FIELD SCIENTIST CHALLENGE

Find evidence of:

WATER

What is your evidence?

FIELD SCIENTIST CHALLENGE

Find evidence of:

HUMAN ACTIVITY

Is it helpful, harmful, or neutral?

FIELD SCIENTIST CHALLENGE

Find something:

THAT SURPRISED YOU

Why?

FIELD SCIENTIST CHALLENGE

Find something that makes you say:

I WONDER...

Write your question.

FIELD SCIENTIST CHALLENGE

Find a place where an animal might find:

FOOD + WATER + SHELTER

What animal might live there?

FIELD SCIENTIST CHALLENGE

Find something that:

CHANGED SINCE LAST WEEK

What changed?

PART 9

MATERIALS MASTER CHECKLIST

Permanent Nature Academy Kit

Student Supplies

□ 20 Field journals

□ 20 clipboards

□ 40 pencils

□ Colored pencils

□ Sit pads

□ Waterproof field notebooks

Field Science

□ 10 hand lenses

□ 10 magnifying glasses

□ 8 binoculars

□ 6 compasses

□ 6 measuring tapes

□ 4 quadrat frames

□ Thermometer

□ Weather station

□ Rain gauge

□ Field guides

□ Laminated species cards

Mapping

□ Site maps

□ Large map paper

□ Butcher paper

□ Rulers

□ Markers

□ Colored pencils

Stewardship

□ Work gloves

□ Trash bags

□ Buckets

□ Hand tools appropriate for student use

□ First aid kit

□ Hand sanitizer

□ Drinking water

Program Infrastructure

□ Weather plan

□ Emergency contact information

□ Student attendance sheet

□ Medication/emergency information as required

□ Site safety map

□ Staff radios/communication device

□ Emergency evacuation plan

PART 10

INSTRUCTOR PREP CHECKLIST

Before the Four-Week Series

□ Establish three permanent sit spots

□ Establish three biodiversity study areas

□ Create large master site map

□ Prepare student field journals

□ Print all data sheets

□ Print and laminate challenge cards

□ Prepare Seasons of the Canyon chart

□ Prepare Nature Neighbors species cards

□ Prepare stewardship supplies

□ Review site hazards

□ Establish weather cancellation procedures

□ Confirm emergency procedures

□ Identify culturally appropriate local ecological knowledge resources and partners

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PART 11

WASHINGTON STANDARDS CROSSWALK

A key point for KEEN: OSPI states that the Integrated Environmental and Sustainability Education standards are **not grade-specific standards** in the same way as core content standards. They are intended to be integrated with science, ELA, math, social studies, and other learning areas. Therefore, the strongest approach is to document both the **ESE strand** and the **grade-band science practices/content connections**.

Washington Integrated ESE Alignment

KEEN Learning	ESE Connection
Students observe relationships among organisms and their environment	**ESE 1: Ecological Systems**
Students investigate how people affect places	**ESE 2: The Sustainability of Natural and Human Systems**
Students participate in stewardship	**ESE 3: Civic Engagement**
Students collect environmental data	ESE 1 + scientific inquiry
Students identify environmental problems	ESE 2
Students propose or complete stewardship actions	ESE 3
Students communicate evidence-based findings	ESE 3 + ELA integration

Washington's ESE framework identifies three overarching standards: understanding ecological systems, understanding the sustainability of natural and human systems, and engaging in civic responsibility. The standards are intended to provide an interdisciplinary context for learning.

Washington Science / NGSS Connections

Week	Science Practice	Crosscutting Concept	Content Connection
1	Asking questions; planning investigations	Patterns	LS4 / ecosystems
2	Developing and using models	Systems and system models	LS2 / habitat
3	Collecting and analyzing data	Patterns; biodiversity	LS2 / LS4
4	Analyzing data; constructing explanations; communicating information	Cause and effect; systems	LS2 / human impacts

Washington's current K–12 science standards are the Next Generation Science Standards, which emphasize science and engineering practices, crosscutting concepts, and disciplinary core ideas.

MORE SPECIFIC 3–5 NGSS CONNECTIONS

Because the program spans ages 8–11, these are the strongest grade-band connections to consider.

3-LS4-3

Biological Evolution: Unity and Diversity

Students use evidence to construct an explanation for how environmental characteristics affect the survival of organisms.

KEEN Connection:

Students examine habitat features and ask why different species are found in different places.

3-LS4-4

Biological Evolution: Unity and Diversity

Students make a claim about the merit of a design solution that reduces the impacts of a change in the environment on organisms.

KEEN Connection:

Week 4 stewardship projects can become early examples of identifying an environmental impact and considering possible solutions.

4-LS1-1

From Molecules to Organisms: Structures and Processes

Students construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

KEEN Connection:

Nature Neighbors investigations can explore adaptations and habitat needs.

5-LS2-1

Ecosystems: Interactions, Energy, and Dynamics

Students develop a model to describe movement of matter among plants, animals, decomposers, and the environment.

KEEN Connection:

This becomes a natural extension of the September habitat work and could be developed further during the October and January units.

Science and Engineering Practices

Across all four weeks, students practice:

- asking questions;
- planning investigations;
- collecting data;
- analyzing data;
- using evidence;
- constructing explanations;
- communicating information.

These practices are particularly valuable for KEEN because they transform the program from "nature activities" into **authentic outdoor science learning**. Washington's science standards explicitly use this NGSS structure.

ELA CONNECTIONS

Nature Academy naturally integrates literacy.

Students:

- write observations;
- record questions;
- create field notes;
- describe evidence;
- communicate findings;
- present orally;
- listen to peers;
- develop explanations.

KEEN Writing Routine

Every week, students complete:

I observed...

I think...

My evidence is...

I still wonder...

This is a simple way to reinforce evidence-based writing without turning Nature Academy into a classroom worksheet experience.

MATH CONNECTIONS

Students can:

- count organisms;
- tally observations;
- compare quantities;
- measure distances;
- estimate area;
- create tables;
- create simple graphs;
- compare biodiversity across sites.

A future extension would be to have students create a **monthly biodiversity graph** for the Nature Academy site.

SOCIAL STUDIES / CIVIC ENGAGEMENT

The stewardship component connects naturally to civic engagement.

Students learn:

> "We are members of a community that includes people, plants, animals, water, and land."

That opens the door later in the year to:

- habitat restoration;
- public lands;
- community science;
- local environmental decisions;
- conservation careers;
- Tribal perspectives and Indigenous ecological knowledge, when developed in partnership with appropriate local knowledge holders.

This is particularly appropriate for KEEN given its location in the Yakima River Canyon and its relationships with the Yakama Nation. Any incorporation of Tribal knowledge should be developed through **authentic partnership and appropriate permission**, rather than simply inserting Indigenous content into a lesson.

PART 12

KEEN NATURE ACADEMY ASSESSMENT

I would **not** use traditional tests.

Instead, KEEN can maintain a simple **Field Scientist Progress Tracker**.

Skill	Beginning	Developing	Demonstrated
Makes detailed observations	□	□	□
Asks investigable questions	□	□	□
Distinguishes observation/inference	□	□	□
Uses field equipment safely	□	□	□
Records data	□	□	□
Identifies patterns	□	□	□
Uses evidence	□	□	□
Communicates findings	□	□	□
Participates in stewardship	□	□	□

This gives KEEN a way to demonstrate **educational outcomes** to parents, schools, funders, and grantmakers without sacrificing the experiential nature of the program.

THE BIGGER KEEN NATURE ACADEMY MODEL

I think this first four-week packet establishes a very strong model for the rest of the year:

SEPTEMBER — I AM A SCIENTIST OF THIS PLACE.
I observe and ask questions.

OCTOBER — I AM A STEWARD OF THIS PLACE.
I understand problems and help restore habitat.

NOVEMBER — I AM A TRACKER OF THIS PLACE.
I learn to recognize wildlife and ecological relationships.

WINTER — I UNDERSTAND HOW THIS PLACE CHANGES.
I study winter ecology, climate, water, and resilience.

SPRING — I CONTRIBUTE TO THE KNOWLEDGE OF THIS PLACE.
I participate in community science and restoration.

MAY — I CAN TELL THE STORY OF THIS PLACE.
I communicate what I learned and why it matters.