

CONNECTING FIELD TRIPS TO CLASSROOM CURRICULUM

Research and common sense show that field trips are much more memorable, impactful, and effective when deliberately connected to classroom curriculum. Having clear ties to what you're working on in class helps build student knowledge, while also making the entire curriculum more relevant. Use these tips to create a cohesive learning experience.

Identify your learning goals

Before planning your field trip or any of the supporting curriculum, ask yourself: *What do I want students to gain from this experience?* Do you have specific topics or concepts you'd like to address? Skills you would like students to practice? It's important to identify these at the very beginning so that you can incorporate them into both field trip and classroom activities.

Identify 1-3 specific concepts or skills you would like students to become proficient in by the end of the unit. Think about how students will demonstrate achievement of these Learning Goals, and what education standards they meet. Then, identify which Learning Goal(s) *each* planned activity – both in the classroom and during your field trip – will support. See Pages 3-4 of this document for planning templates and pages 5-10 for an example fieldtrip-driven unit plan.

Before your field trip

Classroom activities done prior to your field trip can serve several purposes:

- **Build knowledge** of the concepts or topics they will explore during their field trip
- **Practice skills** or use tools they will use during their field trip
- **Meet experts** who can introduce the topics students are exploring
- **Introduce expectations** and rules you wish students to follow during the field trip
- **Orient students** to what they will see and do

During your field trip

Some ways you can actively support classroom work during the field trip:

- **Prepare an effective worksheet** that incorporates Learning Goals and provides guidance for students about what to focus on ([see our Teacher Resources page](#) for our *Guide to Designing a Great Field Trip Worksheet*)
- **Sign up for an education program** that relates to your Learning Goals, if available
- **Enlist experts at the site** to guide students, answer questions, or provide special opportunities such as career interviews or a private tour

NOTE: Not sure what learning opportunities your field trip site can provide? JUST ASK! Many sites welcome teachers who wish to work with them on special programs, and developing these relationships can help spark authentic student projects long into the future.

After your field trip

It's important not to let the opportunity to continue learning slip away once you get back to class!

- **Review and reinforce** what they learned during the field trip
- **Investigate questions** that came up during the field trip
- **Build on the experience** with related projects and experiments
- **Use it as a segue** into the next learning unit!

SIMPLE IDEAS FOR PRE- AND POST-FIELD TRIP PROJECTS

Before the Field Trip

- Have students draw a picture of what they think the field trip site will be like and what they'll see there. Use the drawing as an assessment tool by having students adjust their picture after the field trip.
- Ask students to research the history of the field trip site and explain its significance in the local community.
- Have students practice visual observation skills in the classroom or on school grounds by asking them to imagine themselves as alien visitors to Earth, then describe ordinary objects (such as a hairbrush, clothespin, blade of grass, etc.) in detail.

After the Field Trip

- Have students select an animal or object to observe closely at the field trip site, then write a story or research report about it.
- Ask students to invent a new species of animal, or a new version of an object or artifact they saw during their field trip. Have them build a model and give a presentation sharing why they think their invention is an improvement on the original.
- Challenge students to research an [age-appropriate conservation or social issue](#) related to their field trip site, and ask them to come up with ways to prevent or mitigate this issue.

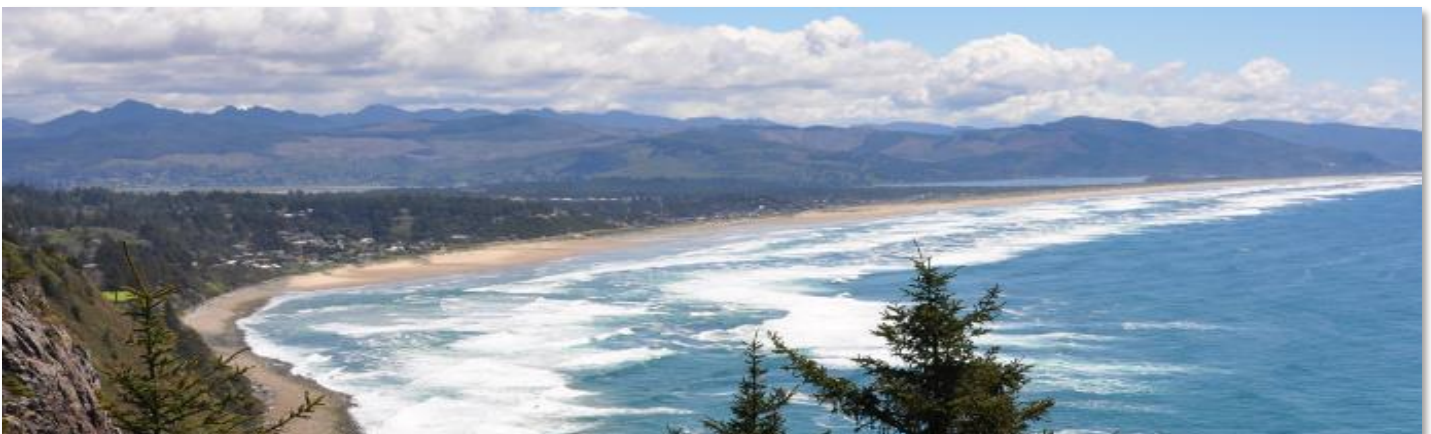
ADDITIONAL RESOURCES

Visit our [Teacher Resources page](#) for more tools and field trip information.

Visit our Ocean Literacy Partnership [Resources Library](#) for activities, curriculum, and background information on a number of ocean topics.

See our [Map of Lincoln County Field Trip Sites and Community Partners](#).

[Contact Oregon Coast Aquarium's Teacher Programs Manager](#) for curriculum planning, field trip support, and help connecting to community partners.



TEACHER PLANNING PAGE FOR FIELDTRIP-CONNECTED CURRICULUM

Learning goal(s) for overall unit:

1. Specific topics?
2. Broad concepts?
3. Skills or behaviors?

How will the field trip support these learning goals?

How will classroom curriculum support these learning goals?

BEFORE field trip:

AFTER field trip:

What questions will students investigate and answer throughout this unit? (NOTE: Make sure these directly support your Learning Goals!)

Education standard(s) being addressed or worked towards:

FIELD TRIP UNIT PLANNING CALENDAR

UNIT NAME/THEME:	Field Trip Site:	Time Frame:
Learning Goals - Student will:	Questions students will investigate and answer:	

WEEK __*

DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
Question to investigate:	Question to investigate:	Question to investigate:	Question to investigate:	Question to investigate:
Objective(s):	Objective(s):	Objective(s):	Objective(s):	Objective(s):
Activity:	Activity:	Activity:	Activity:	Activity:
Connection to Field Trip:	Connection to Field Trip:	Connection to Field Trip:	Connection to Field Trip:	Connection to Field Trip:

NOTES:

TEACHER PLANNING PAGE FOR FIELDTRIP-CONNECTED CURRICULUM

Learning goal(s) for overall unit:

1. Specific topics?

Students will identify adaptations as features that ocean organisms have which help them to get food, find mates, grow, and survive in their unique habitat.

2. Broad concepts?

Students will understand that all living things have internal and external structures that help them to survive where they live.

3. Skills or behaviors?

Students will practice scientific observation skills and using evidence to support their statements.

How will the field trip support these learning goals?

At Oregon Coast Aquarium, students will observe a diversity of ocean species and identify visible adaptations they have for survival in their specific habitats.

How will classroom curriculum support these learning goals?

BEFORE field trip: Activities will support students in defining the term *adaptation*; practicing scientific observation skills they will use at Oregon Coast Aquarium; and becoming familiar with species and ecosystems they will see at Oregon Coast Aquarium.

AFTER field trip: Activities will support students in identifying patterns of *external* adaptations in a diversity of living things; investigating *internal* features that help with survival; and exercising scientific skills to gather evidence about new species and habitats

What questions will students investigate and answer throughout this unit? (NOTE: Make sure these directly support your Learning Goals!)

- What are adaptations and how do they help living things survive?
- How do ocean organisms use their adaptations to survive in their unique habitats?
- How do scientists learn about species and their habitats?

Education standard(s) being addressed or worked towards:

NEXT GENERATION SCIENCE STANDARDS (NGSS):

Performance Expectation 4-LS1-1: Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction

- *Science & Engineering Practices:* Construct an argument with evidence, data, and/or a model.
- *Disciplinary Core Ideas:* Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction.
- *Crosscutting Concepts:* A system can be described in terms of its components and their interactions.

FIELD TRIP UNIT PLANNING CALENDAR

UNIT NAME/THEME: Ocean Adaptations (4 th Grade)	Field Trip Site: Oregon Coast Aquarium	Time Frame: 2 weeks (Ten 45-minute instructional periods)
<p>Learning Goals – Student will:</p> <ul style="list-style-type: none"> • identify adaptations as features that ocean organisms have which help them to get food, find mates, grow, and survive in their unique habitat • understand that all living things have internal and external structures that help them to survive where they live • practice scientific observation skills and using evidence to support their statements 	<p>Questions students will investigate and answer:</p> <ul style="list-style-type: none"> • What are adaptations and how do they help living things survive? • How do ocean organisms use their adaptations to survive in their unique habitats? • How do scientists learn about species and their habitats? 	

WEEK 1

DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
<p>Question to investigate: How do scientists learn about species and their habitats?</p> <p>Objective(s):</p> <ul style="list-style-type: none"> • Identify skills that scientists use to study the world • Introduce field trip <p>Activity:</p> <ul style="list-style-type: none"> • Pre-unit KWL exercise • “What Do Scientists Do?” reading round robin • Review Student Contract and Parent Info page found in the OCAq Field Trip Planning Guide; send home for parents to sign <p>Connection to Field Trip: Students will use these skills to make observations at OCAq.</p>	<p>Question to investigate: How do scientists learn about species and their habitats?</p> <p>Objective(s): Practice skills that scientists use to study the world</p> <p>Activity: Schoolyard Safari</p> <p>Connection to Field Trip: Students will use these skills to make observations at OCAq.</p>	<p>Question to investigate: What are adaptations and how do they help living things survive?</p> <p>Objective(s): Understand what an adaptation is and how it functions</p> <p>Activity: Adaptation Stations</p> <p>Connection to Field Trip: Understanding the basics of what adaptations are and why living things have them will help students explain what they see at OCAq.</p>	<p>Question to investigate: How do ocean organisms use their adaptations to survive in their unique habitats?</p> <p>Objective(s):</p> <ul style="list-style-type: none"> • Investigate common Oregon Coast species and habitats • Prepare for field trip <p>Activity: <ul style="list-style-type: none"> • Ecosystem Exploration • Tidal animals exploration • OCAq Virtual Field Trip video </p> <p>Connection to Field Trip: Students will build familiarity and knowledge of organisms and habitats they’ll encounter at OCAq. They will also learn about field trip expectations.</p>	<p>Question to investigate: How do ocean organisms use their adaptations to survive in their unique habitats?</p> <p>Objective(s): Identify and explain adaptations for coastal species</p> <p>Activity: Field trip to OCAq!</p> <ul style="list-style-type: none"> • Student Guide Book • “It’s A Rough Life” lab program • Encourage students to use their scientist skills to closely observe species and their adaptations <p>Connection to Field Trip: N/A</p>

NOTES: Review Oregon Coast Aquarium’s [Field Trip Planning Guide for Teachers](#) thoroughly before beginning this unit. As soon as possible, recruit chaperones for your field trip. Fill out the “Chaperone Information for Oregon Coast Aquarium Field Trip” pages (available in Spanish) and distribute ASAP so Chaperones have time to review and ask questions.

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WEEK 2

DAY 6	DAY 7	DAY 8	DAY 9	DAY 10
<p>Question to investigate: How do ocean organisms use their adaptations to survive in their unique habitats?</p> <p>Objective(s): Explore how animal adaptations reflect their natural habitats</p> <p>Activity: The Perfect Home</p> <p>Connection to Field Trip: Students can recall exhibits they saw at the Aquarium for inspiration and ideas.</p>	<p>Question to investigate: What are adaptations and how do they help living things survive?</p> <p>Objective(s): Identify patterns of adaptations in unrelated species around the world</p> <p>Activity: Adaptations Around the World</p> <p>Connection to Field Trip: Students should recall the animals they saw at OCAq.</p>	<p>Question to investigate: What are adaptations and how do they help living things survive?</p> <p>Objective(s): Investigate common internal adaptations of ocean animals</p> <p>Activity: In the Belly of the Beast</p> <p>Connection to Field Trip: Ask students to imagine what internal adaptations some of the species they saw at the Aquarium might have to help them survive in the ocean.</p>	<p>Question to investigate: How do scientists learn about species and their habitats?</p> <p>Objective(s): Practice scientific observation skills and apply understanding of adaptations</p> <p>Activity: Mystery Species</p> <p>Connection to Field Trip: Students call recall Aquarium species for inspiration, and apply the same observation skills they used there.</p>	<p>Question to investigate: <i>What do I know now that I didn't know before?</i></p> <p>Objective(s): Reinforce knowledge gained by reflecting on the whole unit</p> <p>Activity: <ul style="list-style-type: none"> • Complete KWL from Day 1 • Identify what else they would still like to learn! </p> <p>Connection to Field Trip: Students should describe how their experience at Oregon Coast Aquarium contributed to their knowledge.</p>

NOTES: Additional resource: ["Blue Whales and Buttercups" book](#) from the *Seeds of Science* reading series – all about variation and adaptation

The comprehensive collection of various types of adaptations at this [BBC Nature page](#) is a great general resource!

EXPLANATION OF “OCEAN ADAPTATIONS” EXAMPLE UNIT ACTIVITIES

Day 1

Pre-unit KWL exercise – On a large white board or sheet of chart paper, create a 3-column KWL chart with the first column labeled “Know”, the second column labeled “Want to learn”, and the third labeled “Learned”. As an introduction to this unit, ask students: *What do you already know about how ocean animals survive?* Record answers in the first column. Then ask, *What do you want to learn about how ocean animals survive?* Record answers in the second column. Tell students that using classroom activities and a field trip to Oregon Coast Aquarium, we are going to answer the following questions: *What are adaptations and how do they help living things survive? How do ocean organisms use their adaptations to survive in their unique habitats? How do scientists learn about species and their habitats?*

“What Do Scientists Do?” reading round robin – give students copies of the linked Big Book about how scientists do their job: investigating the world around us. Going around the classroom, have students take turns reading one paragraph at a time.

Day 2

Schoolyard Safari – students practice skills that scientists use to study the world in the familiar habitat of their school grounds. Take students outside into a safe, quiet area in the schoolyard (or a nearby park or natural space if possible). Ask students to share questions they have about what they see around them. (Student curiosity will vary but may include questions such as *what animals live here? Or why is there so much grass and no trees?* Tell students that they will use several important tools that scientists use to answer the questions they have about the world: their eyes, their ears, and their hands. Direct students to spread out in the designated area and choose a one-square-foot area to closely study in as much detail as possible. They should use their *eyes* to observe the colors, shapes, sizes, and patterns they see in their study site; their *ears* to observe sounds nearby and caused by them touching or tapping things in their site; and their *hands* to observe the texture and temperature of how things feel in their site. They should write all these observations down in a field journal and include drawings if they wish.

- Materials needed: Field journals, pencils, rulers (to estimate their one-square-foot area), hand lenses (optional)

Day 3

Adaptation Stations – Before class, print out the prompts for each station (see below) in large print and place each on a table with that station’s materials. Place students into four groups. If you haven’t already, define *adaptations* as *features that all living things have which help them survive where they live*. Tell students that they are going to rotate between four different stations representing four different types of adaptations: moving, eating, hiding, and mating. Send each group to start at a different station and allow them to explore the materials for a designated amount of time (at least 8-10 minutes) before asking them to rotate to the next station.

1. **Moving Adaptations Station:** Have students act out descriptions of how specific animals move (examples: a seal galumphing, a lion stalking, a bird hopping between branches, etc.)
 - Materials: pictures of several animals with short descriptions of how they move
 - Prompt: “Read the descriptions of how these animals move. Then take turns acting them out!”
2. **Eating Adaptations Station:** Students will use everyday materials that represent mouth and jaw adaptations to attempt to hunt different types of food.
 - Materials: For mouths: clothespins, chopsticks, tweezers, spoons; for foods: pennies, beads, toothpicks; two small rubs (one for mouth items and one for food items)
 - Prompt: “Choose a mouth and experiment with what type of ‘food’ you can most easily capture!”
3. **Hiding Adaptations Station:** Students will match cut-out images of different animals to the habitat they think it lives in based on each animal’s camouflage.
 - Materials: cut-out pictures of various animals; fabric (or magazine) swatches that are similar to each animal’s coloration
 - Prompt: “Match the animal to its ‘habitat’ based on the colors and textures you see.”

4. *Mating Adaptations Station*: Students will observe both extreme and more subtle features that animals have to attract mates.
- Materials: Pictures of animals with striking mate-attracting features (peacocks, cuttlefish, narwhals, etc.)
 - Prompt: “Check out these crazy critters! What features do you see that might help them to attract a mate?”

NOTE: [The BBC Nature Adaptations site](#) lists numerous species with different types of adaptations. You can find pictures and more resources for each station at the linked site.

Day 4

Ecosystem Exploration – Using the Oregon Coast Aquarium’s Oceanscape Network, explore [the ocean and coastal ecosystem pages](#) with students. There is a plethora of information on this site, so base your explorations on the time available and student interest (ask: *what do you want to learn more about?*). The goal of this activity is to familiarize students with some of the habitats they’ll encounter at Oregon Coast Aquarium, so focus on the Sunlit Zone (in the Open Sea section), Beaches and Estuaries (in the Coastal Areas section), and Reefs and Kelp Forests (in the Coastal Waters section).

Tidal animals exploration – Similar to the exploration above, use the [interactive illustration of common Oregon tidal animals](#) found on the Oceanscape Network to investigate some of the species that students will see at the Aquarium. Click each organism’s name for information and pictures.

OCAq Virtual Field Trip video – Play the 7-minute video located on the [Aquarium’s Teacher Resources Page](#). This will introduce students to what they will see on their field trip, rules they should follow, and your expectations for what they will learn at the Aquarium.

Day 5 - Field trip to OCAq!

Student Guide Book – Use the [self-guided workbooks for Grades 3-5](#) available at the Aquarium Front Desk to direct student learning and give them a space to record observations while walking around the Aquarium.

“It’s A Rough Life” lab program - The rocky shore is a tough neighborhood. In this on-site lab program, students will learn about the remarkable ways tidepool residents are adapted to weather the extremes of life on the rocks.

Throughout the field trip, encourage students to think about our main driving question: *How do ocean animals survive?*

Day 6

The Perfect Home – In this activity, students will design an aquarium exhibit for an Oregon Coast species to explore how animals’ adaptations reflect their natural habitats. Ask each student to choose an animal that they saw at Oregon Coast Aquarium (if they can’t recall an exact species, use our [Explore Our Exhibits pages](#) to find and learn more about it). Then have students sketch out the perfect exhibit space for that species based on its needs. Exhibits should reflect that animal’s unique adaptations and be as close to its natural habitat as possible. Encourage students to recall the different components they observed in the Aquarium exhibits (places to hide, lighting, sand or rocks, etc.). When designs are complete, ask students to share their exhibit proposals and share feedback with each other.

Extension Opportunity: If time and resources allow, have students build a small scale model of their exhibit!

Day 7

Adaptations Around the World – Students will hypothesize the functions of various adaptations, then organize these adaptations into categories to identify patterns found in animals around the world. Prepare for this activity by accessing the [BBC Nature Adaptations page](#) and printing large pictures of the following 3 organisms in each of the following categories:

- [Camouflage](#): Arctic Fox, Leafy Sea Dragon, Praying Mantis
- [Adapted to Gliding](#): Flying Frog (featured at top of page), Great Grey Owl, Flying Fish
- [Courtship Display](#): Peacock, Broadley’s Flat Lizard, Giant Cuttlefish
- [Predation Defense](#): Saguaros, Hedgehog, Thorny Devil

Challenge students to group the pictures into four different categories, based on what they can see in the pictures: *adaptations that help with hiding*, *adaptations that help with movement*, *adaptations that attract mates*, and *adaptations that fight predators*. After students feel they have organized all the pictures the best they can, ask them to hypothesize what specifically they believe the adaptations help the organisms do. (Answers should reflect the four BBC Nature categories listed above.)

Relate the animals pictured to ones they saw at the Aquarium. Can they think of any Aquarium animals with similar features?

Day 8

In the Belly of the Beast – Using the Common Squid as an example, students will investigate internal adaptations of an ocean species. There are a few ways you can do this activity:

- Real dissection! – The best option, of course, is to use real specimens. Buy several fresh, whole squid at the market and have students dissect them, identifying features they see. The next resource below will be very useful in guiding students through this.
- [Virtual Squid Dissection](#) – a step-by-step guide of squid anatomy with large pictures. Use the text as your guide for talking point to discuss with students as you go through the pictures.
- [Interactive Squid Anatomy](#) – use this site to explore internal and external anatomy of a colossal squid, including pictures and video (Flash Player required)

Whichever method you choose, use the following question guide to highlight key points with students:

- How many arms does the squid have? How many tentacles? Based on the structure of each, describe how their purposes differ.
- What is the function of the siphon? If water shoots out the siphon to propel the squid in the water, which direction does the squid swim?
- How does a squid breathe?
- What features do you see that are adaptations for the squid's predatory life? What adaptations help the squid avoid predators itself?
- What is the function of the pen (gladius)?

As a wrap-up activity, ask students to recall animals they saw at the Aquarium that may have similar anatomy and adaptations.

Day 9

Mystery Species – By the end of this unit, students have seen a huge variety of adaptations in many different types of plants and animals. Challenge students to invent their own species of organism inspired by all they have learned! Students should first ask themselves the following questions about their new species:

- Where does it live?
- What and how does it eat?
- Does it have any predators?
- How does it find mates?
- How does it move?

Then students can sketch (or build, if time and resources allow) their new species for the first half of the class period. Be sure they name their unique new species! In the second half of the period, have students exchange sketches only (with no other information written on them) and have students describe their classmates' species habitat and lifestyle based on the adaptations they can observe. Have the owner of each sketch confirm, deny, and explain their classmates' guesses.

Day 10

Complete KWL Chart from Day 1 – Return to the three-column chart you started at the beginning of this unit. Remind students of the questions they were investigating throughout this unit: *What are adaptations and how do they help living things survive? How do ocean organisms use their adaptations to survive in their unique habitats? How do scientists learn about species and their habitats?* For the blank third “Learned” column, ask students to share everything they learned about how ocean animals survive. Congratulate students on all of their new knowledge!

Identify what else they would still like to learn! – Review the “Want to learn” list on the KWL Chart with students. Did they learn everything they wished to? Check off the things they did learn, and circle what they did not. Topics they didn't cover can become student research projects or be integrated into future units!