HANDS DOWN EDUCATION · 6-WEEK UNIT STUDY PLANNER

Whales unit study

A K-12 whale homeschool curriculum: baleen and toothed whales, migration, echolocation, whale math and the history of whaling, with a six-week plan.

GRADE BANDS K-2 · 3-5 · 6-8 · 9-12
FULL GUIDE https://handsdowneducation.com/homeschool/whales

How to use this planner

The six weeks below are the guide's authored scope and sequence: one focus, one key activity and one portfolio output per week. Run the activity at the level your child is at (the grade band notes tell you how), keep the output, and by week six you have a portfolio that shows the unit end to end.

Pace is yours. A week here is three to five working sessions; a topic that is going well can take two calendar weeks, and one that has run dry can be closed early. Tick the box when a week's output is in the portfolio.

Six-week scope and sequence

Wk	Focus	Key activity	Portfolio output	Done
1	**What is a whale?**	Mammal traits, blowholes, life-size outlines and the two groups of whales; start the field notebook.	A length graph and notebook pages for four species.	☐
2	**Bodies built for the sea**	Blubber, streamlined shapes, flippers and flukes, and the blubber glove experiment.	A labeled whale diagram and a lab write-up.	☐
3	**Eating and the ocean food web**	Baleen and teeth, krill, food chains and food webs, and the comb-and-cereal model.	A food web poster.	☐
4	**Sound and senses**	Whale songs, echolocation, sound in water versus air, and the clap-and-listen model.	A song sketch or an echolocation explanation.	☐
5	**Migration and the ocean world**	Migration routes, map scale, distances, oceans and currents.	A migration map with measured distances.	☐
6	**People and whales**	Whaling history, the Essex and Moby-Dick, the 1986 moratorium and conservation today; final presentation.	A finished field notebook, timeline or policy brief.	☐

Running it at your child's level

Grades K-2: size, sound and mothers and calves

Young children learn whales by comparing and sorting. They can learn that whales are mammals that breathe air through a blowhole, that some have baleen and some have teeth, that calves stay close to their mothers and drink milk, and that whales are the biggest animals on Earth. Life-size outlines and sound recordings make the facts real.

- Life-size whale: mark out a blue whale, a humpback and an orca on the driveway or a field with chalk or string, then count how many child-steps each one takes.
- Baleen or teeth: use a comb to strain cereal from a bowl of water and compare it to picking pieces up with tongs, then sort whale pictures into baleen whales and toothed whales.
- Blowhole breathing: hold a breath and time it, then compare with a sperm whale that can dive for more than an hour, and talk about why whales must come up for air.
- Mother and calf: read about a humpback calf's first year and draw the pair side by side, labeling who is bigger and what the calf needs.

  Reading: Big Blue Whale by Nicola Davies, a gentle nonfiction picture book about the blue whale's size and life, and The Snail and the Whale by Julia Donaldson as a rhyming read-aloud.

Grades 3-5: adaptations, food chains and migration

Upper elementary students can explain how a whale's body helps it survive: blubber for warmth, a streamlined shape for swimming, baleen for filtering krill and echolocation for hunting in the dark. They can build ocean food chains, trace migration routes with a map scale and compare species with real measurements.

- Blubber glove: test how a layer of shortening insulates a hand in ice water, time both hands, and write up the result as a short lab report.
- Krill to whale: build an ocean food chain from phytoplankton to krill to a blue whale, then a food web that adds fish, seals and orcas.
- Migration map: plot the gray whale and humpback migrations on a world map, use the scale bar to estimate each distance, and explain why whales travel between cold feeding waters and warm calving waters.
- Species cards: make ten whale trading cards with length, weight, diet, range and group, then sort and order them in different ways.

  Reading: Whales by Seymour Simon, with large photographs and clear explanations of how whales live, and Is a Blue Whale the Biggest Thing There Is? by Robert E. Wells for a lesson in scale.

Grades 6-8: sound, diving and population data

Middle schoolers can study the physics and physiology behind whale behavior: how sound travels faster and farther in water than in air, how toothed whales use echolocation, and how deep divers manage oxygen and pressure. They can also read real population data and connect the rise and fall of whale numbers to human activity.

- Sound in water: tap two spoons together in air and then underwater with an ear to the side of a tub or a zip bag of water, compare what you hear, and research the speed of sound in each.
- Echolocation model: blindfold one player who claps and listens while partners stand at different distances, then explain how toothed whales judge distance from returning clicks.
- Dive physiology: compare the breath-hold and depth records of a sperm whale, a Cuvier's beaked whale and a human free diver, and explain the adaptations that make the difference.
- Population graph: graph published estimates for one population, such as North Atlantic right whales or eastern Pacific gray whales, and write a paragraph on what the trend shows.

  Reading: Revenge of the Whale: The True Story of the Whaleship Essex by Nathaniel Philbrick, the young readers' account of the sinking that inspired Moby-Dick.

Grades 9-12: marine ecology, whaling history and conservation

High schoolers can treat whales as a case study in ecology, history and policy: the role of whales in cycling nutrients through the ocean, the whale-oil economy of 19th-century New England, the collapse of many populations under industrial whaling, the 1986 moratorium and the recovery of some species, and current questions about ship strikes, fishing gear and ocean noise. With lab write-ups and a research paper, the unit supports a biology, marine science or history credit.

- Whaling economy: read primary sources from the New Bedford whaling era, chart the products made from a single whale and explain why kerosene and petroleum ended the trade.
- Policy brief: choose one current question, such as vessel speed limits or rope-less fishing gear, gather evidence from at least three perspectives and write a balanced two-page brief.
- Whale pump: research how whales move nutrients from the deep ocean to surface waters and draw a labeled model of the cycle.
- Literature and science: read selected chapters of Moby-Dick and compare Melville's whale lore with what scientists know today.

  Reading: Moby-Dick by Herman Melville, read in selected chapters, alongside In the Heart of the Sea by Nathaniel Philbrick, the full history of the Essex.

A sample week, subject by subject

Reading & Writing

Keep a whale field notebook: each day, one species with a labeled sketch, its length, what it eats, where it lives and one surprising fact, ending the week with a short report on a favorite.

Math

Measure a blue whale, a humpback, an orca and a dolphin in the yard or a park with a tape measure and chalk or string, then compare each to your child's height and make a bar graph of the lengths.

Science

Make a blubber glove: coat one hand in a bag of shortening, put both hands in ice water and time how long each can stay, then explain how blubber keeps whales warm.

Social Studies

On a world map, trace the gray whale migration from the Arctic feeding grounds to the lagoons of Baja California and back, and estimate the round-trip distance with the map scale.

Art & Music

Listen to recorded humpback songs, sketch the rise and fall of the sounds as a line drawing, and paint a life-size whale tail or eye on butcher paper.

Books, sites and kits

- Big Blue Whale by Nicola Davies (Book (K-2)) — A lyrical nonfiction picture book about the blue whale's size, food and life.
- The Snail and the Whale by Julia Donaldson (Book (K-2)) — A rhyming adventure about a humpback and a small snail, good for a first read-aloud.
- Whales by Seymour Simon (Book (2-5)) — Photographs and plain explanations of whale bodies, behavior and species.
- Is a Blue Whale the Biggest Thing There Is? by Robert E. Wells (Book (2-4)) — A picture book about scale that starts with the blue whale and zooms out to the universe.
- Revenge of the Whale by Nathaniel Philbrick (Book (6-9)) — The true story of the whaleship Essex, adapted for young readers.
- Moby-Dick by Herman Melville (Book (10-12)) — The 1851 novel, best read in selected chapters alongside whaling history.
- NOAA Fisheries (Website) — Free species pages, sound recordings and population information for whales in U.S. waters.
- Monterey Bay Aquarium live cams (Website) — Free live cameras of ocean habitats, useful for observation journals.

Standards this unit covers

- K-LS1-1 (NGSS) — Use observations to describe patterns of what plants and animals need to survive — what whales eat and why they surface to breathe.
- 1-LS1-2 (NGSS) — Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive — whale mothers and calves.
- 3-LS4-3 (NGSS) — Construct an argument with evidence that in a particular habitat some organisms can survive well, some less well and some not at all — whales in cold and warm waters.
- 4-LS1-1 (NGSS) — Construct an argument that plants and animals have internal and external structures that support survival, growth, behavior and reproduction — blubber, baleen and flukes.
- 5-LS2-1 (NGSS) — Develop a model to describe the movement of matter among plants, animals, decomposers and the environment — the krill-to-whale food web.
- MS-LS2-4 (NGSS) — Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations — whale population data.
- CCSS.MATH.CONTENT.4.MD.A.1 (CCSS Math) — Know relative sizes of measurement units and express

measurements in a larger unit in terms of a smaller unit — whale lengths in meters and centimeters.
- CCSS.ELA-LITERACY.W.4.2 (CCSS ELA) — Write informative/explanatory texts to examine a topic and convey ideas and information clearly — the whale field notebook and species report.

Common questions

What should a whale unit study include?

Six strands: what makes a whale a mammal, the two big groups (baleen whales and toothed whales), how whales eat and the ocean food web, senses and sound including echolocation and song, migration and the ocean world, and people and whales from whaling history to conservation. The six-week scope and sequence above runs one strand a week.

Can we do a whale unit study if we live far from the ocean?

Yes. Most of the unit happens with a tape measure, a map, a bowl of ice water and recordings. NOAA Fisheries publishes free species pages and sound clips, the Monterey Bay Aquarium runs free live cameras, and photo-identification projects such as Happywhale let children follow individual humpbacks by the patterns on their tails. A natural history museum skeleton or an aquarium visit is a bonus, not a requirement.

What age is a whale unit study best for?

Every age, with a different depth. Preschool and early elementary children compare sizes, sort whales by baleen and teeth and learn about mothers and calves; upper elementary students study adaptations, food chains and migration; middle schoolers investigate sound, diving physiology and population data; high schoolers take on marine ecology, the history and economics of whaling and current conservation questions.

Can I run a whale unit study with several ages at once?

Yes, and a life-size chalk whale on the driveway is the shared starting point. The same afternoon a five-year-old counts steps from head to tail, a nine-year-old measures and labels the body parts, a twelve-year-old calculates how many of their own body lengths fit inside it, and a fifteen-year-old works out how much krill a blue whale eats in a day from published estimates.

How do I start a whale unit study?

Start with size. Take a tape measure outside and mark out 30 meters for a blue whale, then stand your child at the head and let them walk to the tail. Read a whale picture book that evening and play a recording of a humpback song. By the end of the first week you will have a field notebook, a length graph and a list of questions, and the grade-band section above that fits your child gives the next steps.

Does this unit work for secular and faith-based homeschools alike?

Yes. The core is observation and measurement: body structures, adaptations, food webs, sound, migration and the history of people and whales, which are the same in any home. The 9-12 band mentions the fossil record of early whales, which any family can teach in the framework that fits its convictions.

How much does a whale unit study cost?

Almost nothing. A tape measure, chalk or string, a bag of shortening and a bowl of ice water, a world map and a notebook cover the core activities. The NOAA Fisheries species pages, aquarium cameras and whale-song recordings are free, and most of the books in the resources list are in public libraries.

Are whales a good homeschool science topic?

They are one of the best. Whales map onto the life-science standards at every grade — what animals need, how body structures help them survive, inherited traits, habitats and food webs — and onto physical science through sound, with real measurement, scale and graphing along the way. The skills list above names each with its strand and standard.

Turn this into a full, standards-aligned curriculum

Generate a complete plan around whales for your child's grade and pace — free to try, no account required.

https://handsdowneducation.com/curriculum/generate