Program Correlations to the Next Generation Science Standards and Common Core English/Language Arts Standards

The Classroom Aquarium Education Program (CAEP) provides many great opportunities for learning that supports the Next Generation Science Standards (NGSS) and Common Core English and Language Arts Standards. This document is intended to help you, the classroom teacher, expose your students to the amazing experience of hatching fish in your classroom while still meeting mandated requirements.

The **Next Generation Science Standards** (NGSS) were adopted in California in 2013 and continue to be updated periodically. The list below is not intended to be complete. Rather, it indicates some of the standards that are most strongly or obviously addressed through participation in the CAEP.

The **Common Core English/Language Arts (ELA)** standards include emphasis on applying skills in content areas. Some notes on the correlation of CAEP and the English/Language Arts Common Core standards follow the Next Generation Science Standards correlation tables.

Project WILD

Many teachers in the Classroom Aquarium Education Program receive training on the ***Project WILD Aquatic K-12 Curriculum & Activity Guide.*** Activities that are particularly well suited for CAEP classrooms are indicated in the Project WILD Aquatic K-12 Curriculum tables.

Correlations between the *WILD Aquatic Guide* and the NGSS can be found at: Project WILD Resources - Association of Fish & Wildlife Agencies

Education and the Environment Initiative (EEI)

Teachers participating in the Classroom Aquarium Education Program may also be interested in the units developed through the **Education and the Environment Initiative (EEI).** Some of the appropriate EEI units are indicated in the Education and the Environment Unit Correlations tables.

For more information on the EEI, go to: California Education and the Environment Initiative (EEI)

Next Generation Science Standards (NGSS)

The NGSS have four components

- Performance Expectations (What students should be able to do…These connect the three dimensions listed below)
- Dimension 1: Science and Engineering Practices: major practices that scientists and engineers employ as they "do" science and engineering
- Dimension 2: Crosscutting Concepts: Ideas and practices that cut across the science disciplines (life, physical, earth science)
- Dimension 3: Disciplinary Core Ideas: core ideas…foundational knowledge (rather than trying to teach all information)

In this summary, we will consider the Performance Expectations to be "standards" but will also include notes on Science and Engineering Practices, Crosscutting Concepts, and Disciplinary Core Ideas as appropriate. Most Performance Expectations include the three Dimensions. Many environmental education providers focus on the Crosscutting Concepts in the activities that they provide.

Crosscutting Concepts:

1. Patterns
2. Cause and Effect: Mechanisms and Explanation
3. Scale, Proportion, and Quantity
4. Systems and System Models
5. Energy and Matter: Flows, Cycles, and Conservation
6. Structure and Function
7. Stability and change

Regarding the numbering of the Performance Expectations:

For example, 2-LS3-1 would indicate 2nd grade Life Science standard (Performance Expectation) no. 3-1.

- The first number identifies the grade level or grade level span. In the example, it would be second grade.
- The letter/number combination identifies the content area (Life Science) and numbering system as identified in the National Research Council's Framework for K-12 Science Education (2012). In this case, it would be Core Idea 3 (Scale, Proportion, and Quantity), expectation #1.

PS indicates **Physical Science**
LS indicates **Life Science**
ESS indicates **Earth and Space Science**
ETS indicates **Engineering, Technology and Applications of Science**, sometimes referred to as **Engineering Design**

Note that, in the NGSS, almost all Performance Expectations also include "Clarification Statement(s)." These give examples and other clarifications. They also include "Assessment Boundaries" that help explain what should and should not be included in assessment at that grade level. The Clarification Statements and Assessment Boundaries are not included here.

Next Generation Science Standards that are most strongly or clearly correlated to the Classroom Aquarium Education Program

Grade: Kindergarten

Grade	NGSS Performance Expectation	Crosscutting Concepts	Disciplinary Core Ideas	Science and Engineering Practices	Notes for the Teacher
K	**K-LS1-1:** Use observations to describe patterns of what plants and animals (including humans) need to survive.	Patterns	LS1.C: Organization for Matter and Energy Flow in Organisms	Analyzing and Interpreting Data	In the classroom, the importance of clean water, cool water, and food will be an important part of students' experiences. Formation of redds requires appropriately sized gravel and the absence of much silt.
K	**K-ESS3-1:** Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live	Systems and System Models	ESS3.A: Natural Resources	Developing and Using Models	Class discussions can (and should) include reference to human impacts and how we can provide suitable habitats/environments. For example, silt fences and straw wattle help reduce siltation, and gravel can be brought in to restore degraded habitat. Planting native plants such as willows along streams can help stabilize the soil, provide shade (cool water) for salmonids, and provide habitat for food species such as insects. Dams can help regulate water flow for the benefit of fish, but they can also block access to spawning streams. Water conservation can help by leaving more water for salmonids in streams and lakes. Sunlight warms water, and salmonids need cool water
K	**K-ESS3-3:** Communicate solutions that will reduce the impact of humans on land, water, air, and/or other living things in the local environment	Cause and Effect	ESS3.C: Human Impacts on Earth Systems	Obtaining, Evaluating, and Communicating Information	
K	**K-PS3-1:** Make observations to determine the effect of sunlight on Earth's surface.	Cause and Effect	PS3.B: Conservation of Energy and Energy Transfer	Planning and Carrying out Investigations	

DO NOT MAKE THE DISCUSSION A "DOWNER"!
At this age, emphasis should be on getting kids excited about fish and the environment, not hitting them with a bunch of bad news!

Next Generation Science Standards that are most strongly or clearly correlated to the Classroom Aquarium Education Program

Grade: 1

Grade	NGSS Performance Expectation	Crosscutting Concepts	Disciplinary Core Ideas	Science and Engineering Practices	Notes for the teacher
1	**1-LS1-1:** Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs	Structure and Function	LS1.A: Structure and Function	Constructing Explanations and Designing Solutions	Discussion can include how salmonids use their tails to make redds, how they find and capture food, how they use their fins to move around, including migrating to and from the ocean, and how they migrate to find more resources, with comparisons to analogous human activities. While this standard is about how offspring differ from their parents, it is an opportunity to look at the differences between adults and juvenile fish. It is also an opportunity to discuss how people can assist the fish by such things as removing migration barriers, adding woody debris, etc. Students can observe the fry in the tank and compare their appearance to pictures of adult fish.
1	**1-LS1-2:** Read texts and use media to determine patterns of behavior of parents and offspring that help the offspring survive.	Patterns	LS1.B: Growth and Development of Organisms	Obtaining, Evaluating, and Communicating Information	
1	**1-LS3-1:** Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.	Patterns	LS3.A: Inheritance and Traits LS3.B: Variation of Traits	Constructing Explanations and Designing Solutions	

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Next Generation Science Standards that are most strongly or clearly correlated to the Classroom Aquarium Education Program

Grade: 2

Grade	NGSS Performance Expectation	Crosscutting Concepts	Disciplinary Core Ideas	Science and Engineering Practices	Notes for the teacher
2	**2-LS4-1:** Make observations of plants and animals to compare the diversity of life in different habitats.	Patterns	LS4.D: Biodiversity and Humans	Planning and Carrying Out Investigations	Compare aquatic life, including food organisms, to terrestrial organisms, possibly including adaptations for living in the different environments.
2	**2-ESS2-2:** Develop a model to represent the shapes and kinds of land and bodies of water in an area.	Patterns	ESS2.B: Plate Tectonics and large-Scale System	Developing and Using Models	Students should learn about watersheds, including the concepts that we all live in a watershed and the name of their local watershed. Various watershed models and online maps can be used for this.

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Next Generation Science Standards that are most strongly or clearly correlated to the Classroom Aquarium Education Program

Grade: K-2 Engineering Design

Grade	NGSS Performance Expectation	Crosscutting Concepts	Disciplinary Core Ideas	Science and Engineering Practices	Notes for the teacher
K-2	**K-2-ETS1-1:** Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.	Structure and Function	ETS1.A: Defining and Delimiting Engineering Problems	Asking Questions and Defining Problems	"Object or tool" can be defined loosely to include such things as hatcheries, stream bank plantings, fish ladders, etc.
K-2	**K-2-ETS1-2:** Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.	Structure and Function	ETS1B: Developing Possible Solutions	Developing and Using Models	

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Next Generation Science Standards that are most strongly or clearly correlated to the Classroom Aquarium Education Program

Grade: 3

Grade	NGSS Performance Expectation	Crosscutting Concepts	Disciplinary Core Ideas	Science and Engineering Practices	Notes for the teacher
3	**3-LS1-1:** Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.	Patterns	LS1.B: Growth and Development of Organisms	Developing and Using Models	Students participating in the Classroom Aquarium Education Program will learn about the life cycles of fish and also some food organisms. Salmonids' migration to and from the ocean, while not unique, is unusual. Discuss why it is an advantage to the fish. Students participating in the Classroom Aquarium Education Program will learn about a variety of watershed-related problems such as erosion, littering, over fishing, warming of water, and others, and will discuss possible solutions to those problems. Such mitigations as wattles, regulations, and streamside restoration (including shade producing plants) may be discussed.
3	**3-LS4-3:** Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.	Cause and Effect	LS4.C: Adaptation	Engaging in Argument from Evidence	
3	**3-LS4-4:** Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.	Systems and System Models	LS2.C: Ecosystem Dynamics, Functioning and Resilience LS4.D: Biodiversity and Humans	Engaging in Argument from Evidence	

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Next Generation Science Standards that are most strongly or clearly correlated to the Classroom Aquarium Education Program

Grade: 4

Grade	NGSS Performance Expectation	Crosscutting Concepts	Disciplinary Core Ideas	Science and Engineering Practices	Notes for the teacher
4	**4-LS1-1:** Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.	Systems and System Models	LS1.A: Structure and Function	Engaging in Argument from Evidence	Students participating in the CAEP will learn about fish anatomy. Discussion should focus not on just learning the names of body parts, but on how those body parts help the organisms survive.
4	**4-LS1-2:** Use a model to describe that animals receive different types of information through their senses, process the information I their brain, and respond to the information in different ways.	Systems and System Models	LS1.D: Information Processing	Engaging in Argument from Evidence	
4	**4-ESS3-2:** Generate and compare multiple solutions to reduce impacts of natural Earth processes on humans.	Cause and Effect	ESS2.B: Plate Tectonics and Large-Scale System Interactions	Analyzing and Interpreting Data	Heavy rain years and drought years are natural Earth processes that affect humans and salmonids. People build dams to try to mitigate flood and drought, and the dams affect fish. Students can learn about steps taken to try to reduce dams' negative impacts on fish.

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Next Generation Science Standards that are most strongly or clearly correlated to the Classroom Aquarium Education Program

Grade: 5

Grade	NGSS Performance Expectation	Crosscutting Concepts	Disciplinary Core Ideas	Science and Engineering Practices	Notes for the teacher
5	**5-LS2-1:** Develop a model to describe the movement of matter among plants, animals decomposers, and the environment**.**	Systems and System Models	LS2.A: Inter-dependent Relationships in Ecosystems	Developing and Using Models	Students participating in Classroom Aquarium Education Program will learn about fish and how they feed. Studies can/should include food webs, macroinvertebrates, and fish predators. Throughout the Classroom Aquarium Education Program, students see how the geosphere, hydrosphere, and atmosphere affect fish. For example, successful spawning require a suitable (gravel) substrate, and too much silt can kill the eggs. Polluted water, or water that is too warm, can kill fish. Sunlight can warm the water, and oxygen comes from the air. Classroom studies should include the water cycle.
5	**5-ESS2-1:** Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.	Systems and System Models	LS2.B: Cycles of Matter and Energy Transfer in Ecosystems ESS2.A: Earth Materials and Systems	Developing and Using Models	
5	**5-ESS3-1:** Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.	Systems and System Models	ESS3.C: Human Impacts on Earth Systems	Evaluating and Communicating Information	Students should learn about ways that they and others in their community can help protect salmonid habitat, including water conservation, reducing pollution, streamside improvements, citizen science, storm water runoff and remediation, support for conservation, and other methods

Tip: At this age, kids can begin to comprehend environmental (and other) problems without getting too discouraged. Be sure to emphasize things that they can do to help protect the environment, both now and when they are adults.

Next Generation Science Standards that are most strongly or clearly correlated to the Classroom Aquarium Education Program

Grade: 3-5 Engineering Design

Grade	NGSS Performance Expectation	Crosscutting Concepts	Disciplinary Core Ideas	Science and Engineering Practices	Notes for the teacher
3-5	**3-5-ETS1-2:** Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	Influence of Engineering, Technology and Science on Society and the Natural World	ETS1.B: Devel-oping Possible Solutions	Constructing Explanations and Designing Solutions	Discussion of environmental problems such as erosion, littering, and overfishing will help students understand their role in finding solutions to such problems. Emphasize both things that they can do now and when they are adults.

Tip: At around fourth grade, kids can begin to comprehend environmental (and other) problems without getting too discouraged. Be sure to emphasize things that they can do to help protect the environment, both now and when they are adults.

Next Generation Science Standards that are most strongly or clearly correlated to the Classroom Aquarium Education Program

Grade: 6

Grade	NGSS Performance Expectation	Crosscutting Concepts	Disciplinary Core Ideas	Science and Engineering Practices	Notes for the teacher
6	**MS-LS1-8:** Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.	Systems and System Models Structure and Function	LS1.A: Structure and Function	Obtaining, Evaluating, and Communicating Information	Salmonid anatomy studies should include the lateral line, and how anadromous fish use their sense of smell to find their "home" stream.
6	**MS-ESS3-3:** Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.	Cause and Effect	ESS3.C: Human Impacts on Earth Systems	Constructing Explanations and Designing Solutions	The Classroom Aquarium Education Program includes efforts to minimize negative human environmental impact. Discuss possible solutions to problems faced by salmonids and factors that might be monitored to determine whether the solutions are effective. For example: • # of redds formed in a stretch of stream before and after various modifications • # of salmon in a watershed over a period of years before and after various modifications • Macroinvertebrate studies

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Next Generation Science Standards that are most strongly or clearly correlated to the Classroom Aquarium Education Program

Grade: 7

Grade	NGSS Performance Expectation	Crosscutting Concepts	Disciplinary Core Ideas	Science and Engineering Practices	Notes for the teacher
7	**MS-LS2-1:** Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.	Cause and Effect	LS2.A: Interdependent Relationships in Ecosystems LS2.B: Cycle of Matter and Energy Transfer in Ecosystems	Analyzing and Interpreting Data	"Resources" includes not only food, but suitable habitat (cool water, not too much silt, well oxygenated water).
7	**MS-LS2-3:** Develop a model to describe the cycling of matter and flow of energy among living and non-living parts of an ecosystem.	Energy and Matter	LS2.C: Ecosystem Dynamics, Functioning, and Resilience	Developing and Using Models	
7	**MS-LS2-4:** Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.	Stability and Change	LS2.C: Ecosystem Dynamics, Functioning, and Resilience LA4.D: Biodiversity and Humans	Engaging in Argument from Evidence Stability and Change	"Changes" can be positive (such as improving fish habitat) or negative (such as pollution, changes in substrate, removal of food species, over fishing, etc.) And they can be natural or man-made. Be sure to include positive changes such as tree planting in the riparian zone and returning stream channels to their natural state, as well as negative changes.
7	**MS-LS2-5:** Evaluate competing design solutions for maintaining biodiversity and ecosystem services.	Stability and Change	ETS1.B: Developing Possible Solutions	Engaging in Argument from Evidence	

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Next Generation Science Standards that are most strongly or clearly correlated to the Classroom Aquarium Education Program

Grade: 8

Grade	NGSS Performance Expectation	Crosscutting Concepts	Disciplinary Core Ideas	Science and Engineering Practices	Notes
8	**MS-ESS3-4:** Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.	Cause and Effect	ESS3.C: Human Impacts on Earth Systems	Engaging in Argument from Evidence	Discuss overfishing and the necessity of limits on fish taken…the finiteness of Earth's resources.

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Grade: 6-8 Engineering Design

Grade	NGSS Performance Expectation	Crosscutting Concepts	Disciplinary Core Ideas	Science and Engineering Practices	Notes
6-8	**MS-ETS1-1:** Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.	Influence of Science, Engineering, and Technology on Society and the Natural World	ETS1.A: Defining and Delimiting Engineering Problems	Asking Questions and Defining Problems	Students participating in the Classroom Aquarium Education Program learn about environmental problems affecting watersheds, waterways, and fish, and discuss possible solutions to those problems. Discuss pros and cons of various solutions such as fish ladders, stream restoration, fishing limits, selection for particular genes, hatcheries, etc.

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Next Generation Science Standards that are most strongly or clearly correlated to the Classroom Aquarium Education Program

Grade: H.S. Life Science/Biology

Grade	NGSS Performance Expectation	Crosscutting Concepts	Disciplinary Core Ideas	Science and Engineering Practices	Notes
H.S.	**HS-LS2-6:** Evaluate claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.	Stability and Change	LS2.C: Ecosystem Dynamics, Functioning and Resilience	Engaging in Argument from Evidence	High school biology/life science classes include studies of ecology and population dynamics. Studies of freshwater stream ecology can include salmonids and factors that affect populations both positively and negatively. Consider changes in water flows due to dams or removal of water from streams for human use, including agriculture, industry, and use in the home and lawns. Classroom Aquarium Education Project activities and discussions can include steps that people have taken to try to protect and increase salmonid populations, such as breeding programs (hatcheries), fishing regulations, fish ladders, stream restoration (streamside, placement of large woody debris, gravel mining regulations). etc.
H.S.	**HS-LS2-7:** Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.	Stability and Change	LS2.C: Ecosystem Dynamics, Functioning and Resilience LS4.D: Biodiversity and Humans ETS1.B: Developing Possible Solution	Constructing Explanations and Designing Solutions	

Next Generation Science Standards that are most strongly or clearly correlated to the Classroom Aquarium Education Program

Grade: High School Earth Science

Grade	NGSS Performance Expectation	Crosscutting Concepts	Disciplinary Core Ideas	Science and Engineering Practices	Notes
H.S.	**HS-ESS2-2:** Analyze geosciences data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth Systems.	Stability and Change	ESS2.A: Earth Materials and Systems	Analyzing and Interpreting Data	Changes in streamside vegetation or other causes can result in erosion and siltation. Removal of ground water and water from streams affect fish, and various means can be used to mitigate. Students should be studying climate change in Earth Science classes. What is the predicted affect of climate change on salmonids? How do changes on land, such as roads, agricultural practices, and building, affect fish? Students can investigate things that people have done to try to protect salmonids, such as fishing regulations, stream restoration, hatcheries, fish ladders, road building and logging practice regulations, *et al.*
H.S.	**HS-ESS3-4:** Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.	Stability and Change	ESS3.C: Human Impacts on Earth Systems ETS1.B: Developing Possible Solutions	Constructing Explanations and Designing Solutions	

Grade: High School Engineering Design

Grade	NGSS Performance Expectation	Crosscutting Concepts	Disciplinary Core Ideas	Science and Engineering Practices	Notes for the teacher
H.S.	**HS-ETS1-1:** Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.	Systems and System Models	ETS1.A: Defining and Delimiting Engineering Problems	Asking Questions and Defining Problems	Chemistry studies should include measurement of water chemistry (dissolved oxygen, phosphates, nitrates, other pollutants), and ways that temperature affects dissolved oxygen.
H.S.	**HS-ETS1-2:** Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.	N/A	N/A	N/A	The physics and chemistry of climate change are also relevant topics.
H.S.	**HS-ETS1-3:** Evaluate a solution to a complex real-world problem based on prioritized criteria and tradeoffs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.	N/A	ETS1.B: Developing Possible Solutions	N/A	

Correlations between the Classroom Aquarium Education Project (CAEP) and activities in the *Project WILD Aquatic K-12 Curriculum and Activity Guide*

Many participants in the Classroom Aquarium Education Program receive training for the *Project WILD Aquatic K-12 Curriculum & Activity Guide*. Activities that are particularly well suited for CAEP classrooms are indicated on the table below. Correlations between the *WILD Aquatic Guide* and the NGSS can be found at:

Association of Fish & Wildlife Agencies: Project WILD Resources

Grade	NGSS Standard	WILD Aquatic activities that support the NGSS Standard
K	K-LS1-1	Fashion a Fish Water Plant Art Water Safari
K	K-ESS3-1	Water Safari
K	K-ESS3-3	Water Safari
K	K-PS3-1	N/A
1	1-LS1-1	Are You Me?
1	1-LS1-2	Are You Me?
1	1-LS3-1	Are You Me?
2	2-LS4-1	Aquatic Roots Are You Me? Water Plant Art Water Safari
2	2-ESS2	N/A

Grade	NGSS Standard	WILD Aquatic activities that support the NGSS Standard
3	3-LS1-1	Fashion a Fish Sockeye Scents Turtle Hurdles Water Plant Art
3	3-LS4-3	Aquatic Roots Blue Ribbon Niche Designing a Habitat Edge of Home Fishy Who's Who Got Water? Kelp Help Marsh Munchers Turtle Hurdles Water Plant Art
3	3-LS4-4	Aquatic Roots Blue Ribbon Niche Conservation Messaging Dragonfly Pond Fishy Who's Who Got Water? Silt: A Dirty Word
4	4-LS1-1	Fashion a Fish Kelp Help Micro Odyssey
4	4-LS1-2	Sockeye Scent
4	4-ESS3-2	N/A

Grade	NGSS Standard	WILD Aquatic activities that support the NGSS Standard
5	5-LS2-1	Kelp Help Marsh Munchers Micro Odyssey Turtle Hurdles Water Plant Art
5	5-ESS2-1	N/A
5	5-ESS3-1	Alice in Waterland Aquatic Roots Blue Ribbon Niche Dragonfly Pond Waterworks
3-5 Engineering Design	3-5-ETS1-2	Designing a Habitat
6	MS-LS1-8	N/A
6	MS-ESS3-3	Alice in Waterland Blue Ribbon Niche Conservation Messaging Dam Design Edge of Home Fishable Waters Migration Headache Net Gain, Net Effect Something's Fishy Here! Urban Waterway Checkup Water Canaries Water Works What's in the Air? What's in the Water? Where Does Water Run?

Grade	NGSS Standard	WILD Aquatic activities that support the NGSS Standard
7	MS-LS2-1	Gone Fishing! Hooks and Ladders Migration Headache Puddle Wonders! Urban Waterway Checkup
7	MS-LS2-2	Edge of Home Migration Headache
7	MS-LS2-4	Blue Ribbon Niche Dam Design Fishable Waters Hooks and Ladders Migration Headache Puddle Wonders! Turtle Hurdles Urban Waterway Checkup Water Canaries What's in the Air? What's in the Water? Where Have All the Salmon Gone?
7	MS-LS2-5	Dam Design Net Gain, Net Effect
8	MS-ESS3-4	Net Gain, Net Effect (low correlation)
6-8 **Engineering Design**	MS-ETS1-1	Dam Design

Grade	NGSS Standard	WILD Aquatic activities that support the NGSS Standard
H.S. Biology/ Life Science	HS-LS2-6	N/A
H.S. Biology/ Life Science	HS-LS2-7	Conservation Messaging Dam Design Fishable Waters Gone Fishing! Water Canaries What's in the Air? Where Does Water Run?
H.S. Earth Science	HS-ESS2-2	N/A
H.S. Earth Science	HS-ESS3-4	Fishable Waters Where Does Water Run?
H.S. Physical Sciences	N/A	N/A
H.S. Engineering Design	HS-ETS1-1	N/A
H.S. Engineering Design	HS-ETS1-2	Dam Design
H.S. Engineering Design	HS-ETS1-3	Dam Design

Education and the Environment Unit Correlations with the Classroom Aquarium Education Program

The Education and the Environment (EEI) units in the table below are identified in the EEI NGSS Correlation Guides as especially valuable in teaching the Performance Expectations listed in the table above. The EEI units were written before the NGSS were adopted, and some topics in the EEI units were shifted to different grade levels in the NGSS. Therefore, the grade level designations may differ.

For information on the EEI units, go to: Curriculum - California Education and the Environment Initiative (EEI)

For more information on correlations, go to: NGSS Correlation Guides - California Education and the Environment Initiative (EEI)

Grade	Performance Expectations	EEI Units
K	K-LS1-1 K-ESS3-1 K-ESS3-3 K-PS3-1	K.3.a. The World Around Me K.3.c. A Day in My Life
1	1-LS1-1 1-LS1-2 1-LS3-1	1.2.a. Surviving and Thriving 1.2.c. Finding Shelter 1.2.d. Open Wide! Look Inside!
2	2-LS4-1	2.2.c. and 2.2.d. Alike and Different
K-2	K-2-ETS1-1 K-2-ETS1-2	1. 2.c. Finding Shelter
3	3-LS1-1 3-LS4-3 3-LS4-4	2.2.e and 2.2.f. Flowering Plants in Our Changing Environment 3.3.a. Structures for Survival in a Healthy Ecosystem 3.3.c and 3.3.d. Living Things in Changing Environments
4	4-LS1-1 4-LS1-2 4-ESS3-2	3.3.a. Structures for Survival in a Healthy Ecosystem 3.3.c and 3.3.d. Living Things in Changing Environments 4.2.b. The Flow of Energy Through Ecosystems
5	5-LS2-1 5-ESS2-1 5-ESS3-1	4.2.b. The Flow of Energy Through Ecosystems 4.2.c. Life and Death with Decomposers 5.3.a. Earth's Water 5.3.c. Precipitation, People, and the Natural World 5.3.d. Our Water: Sources and Uses
3-5	3-5-ETS1-2	4.2.c. Life and Death with Decomposers 5.3.a. Earth's Water
6	MS-ESS3-3	5.3.c. Precipitation, People, and the Natural World

Grade	Performance Expectations	EEI Units
7	MS-LS2-1 MS-LS2-3 MS-LS2-4 MS-LS2-5	5.3.c. Precipitation, People, and the Natural World 7.3.e. Responding to Environmental Change 7.4.g. Extinction: Past and Present
8	MS-ESS3-4	7.3.a. Shaping Natural Systems Through Evolution 7.3.e. Responding to Environmental Change 7.4.g. Extinction: Past and Present
Life Sci.	HS-LS2-6 HS-LS2-7	B.6.a. Biodiversity: The Keystone to Live on Earth B.6.b. Ecosystem Change in California B.8.a. Differential Survival of Organisms B.8.b. Biological Diversity: The World's Riches B.8.d. The Isolation of Species E.4.c. The Greenhouse Effect on Natural Systems E.5.d. Ocean Current and Natural Systems E.7.b. The Life and Times of Carbon E.9.c. Liquid Gold: California's Water
Earth Sci.	HS-ESS2-2 HS-ESS3-4	B5.c. High Tech Harvest: Genetic Engineering and the Environment B.6.a. Biodiversity: The Keystone to Life on Earth E.4.c. The Greenhouse Effect on Natural Systems E.5.d. Ocean Current and Natural Systems E.5.e. Rainforests and Deserts: Distribution, Uses, and Human Influence E.7.b. The Life and Times of Carbon E.9.c. Liquid Gold: California's Water
H.S. ETS	HS-ETS1-1 HS-ETS1-2 HS-ETS1-3	B5.c. High Tech Harvest: Genetic Engineering and the Environment E.7.b. The Life and Times of Carbon B.6.b. Ecosystem Change in California E.4.c The Greenhouse Effect on Natural Systems E.5.d. Ocean Current and Natural Systems E.9.c. Liquid Gold: California's Water

Common Core Standards in English/Language Arts

The Common Core Standards in English/Language Arts are divided into standards for Reading, Writing, Speaking and Listening, and Language. Some of the activities in the Classroom Aquarium Education Program curriculum guide Learning to Fish, Fishing to Learn can help teach writing, reading, and language skills as well as speaking and listening. See that guide for more specific correlations.

Most Classroom Aquarium Education Program activities involve discussion and do support the development of speaking, listening, and language skill development. The standards at each grade level are fairly similar in the specific skills that they address, so we have not listed them for each activity.

Here is a brief summary of some of the speaking/listening and language skill standards that can be supported through the Classroom Aquarium Education Program:

Speaking and Listening Standards (SL)

- **SL1 (lower grades):** Participate in collaborative conversations with diverse partners about … topics … with peers and adults in small and larger groups.
- **SL1 (upper grades):** Engage effectively in … discussions
- **SL2 (lower grades):** Confirm understanding of … information presented orally … by asking and answering questions and requesting clarification if something is not understood.
- **SL2 (upper grades):** Determine the main ideas **…,** Paraphrase …, Summarize …
- **SL3:** Ask and answer questions in order to seek help, get information, or clarify something that is not understood.
- **SL4 (lower grades):** Describe … things and events with relevant details, expressing ideas and feelings clearly
- **SL4 (upper grades):** Report … on a topic … sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas …
- **SL6:** Speak audibly and express thoughts, feelings, and ideas clearly. Produce complete sentences when appropriate …

Language Standards (L)

- **L1:** Demonstrate command of the conventions of standard English grammar and usage when ... speaking.
- **L4:** Determine or clarify the meaning of unknown and multiple-meaning words and phrases …
- **L6 (lower grades):** Use words and phrases acquired through conversations …
- **L6 (upper grades):** Acquire and use accurately grade-appropriate general academic and domain specific words and phrases …