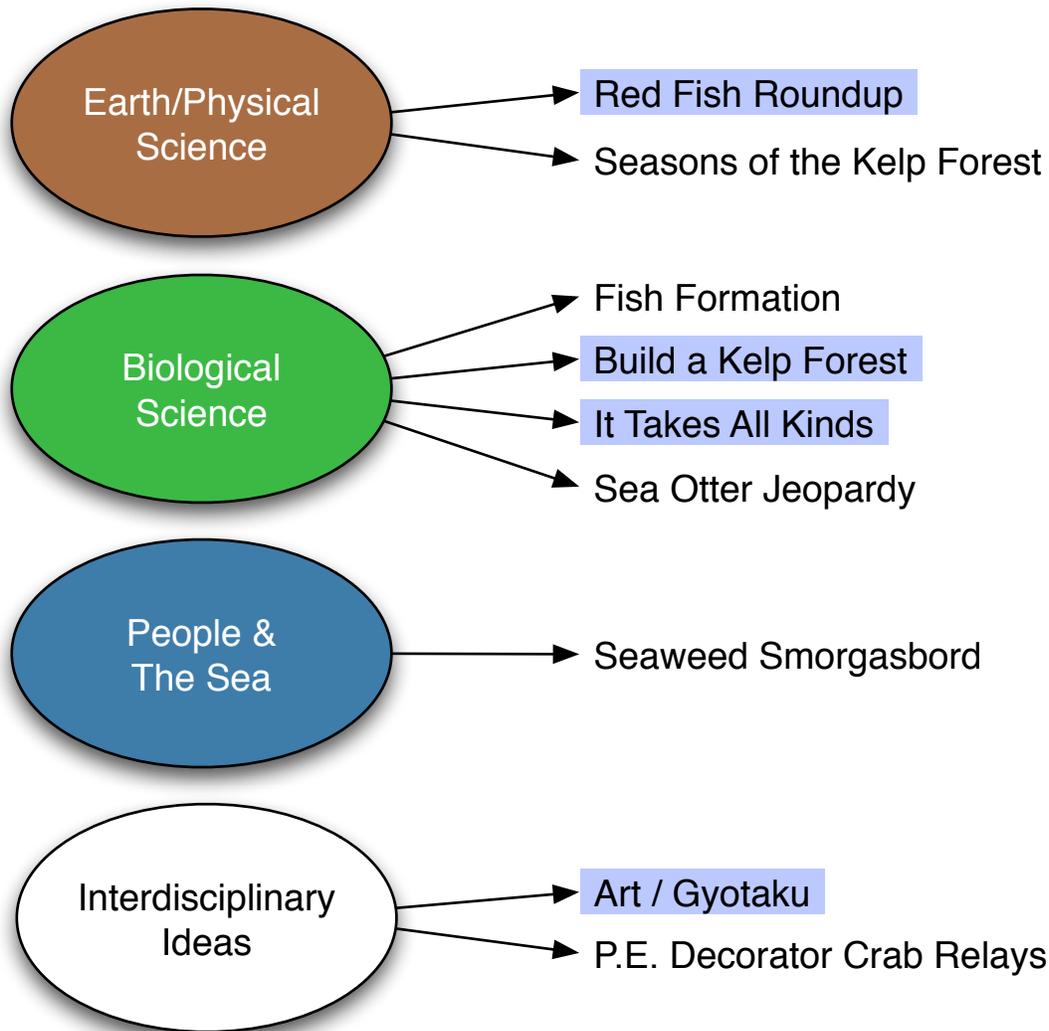


KELP FOREST

Grade 4

CONCEPT MAP



Highlighted text denotes recommended first year lessons

The Kelp Forest

Flow Chart

Grade 4 MARE

The Kelp Forest Flow Chart

(Blue title indicates lessons to start within Year 1)
A class period =40 minutes

Seasons of
the Kelp
Forest

Earth/ Physical
Science



Fish Formation

Biological Science
Hands on



It Takes
All Kinds

Biological Science
Hands on
4 class periods



Red Fish
Round Up

Earth/ Physical Science
Hands on
3 class periods



Build a
Kelp
Forest

Biological Science
Hands on
4 class periods

Seaweed
Smorgasbord

People & The Sea



Sea Otter
Jeopardy

Biological Science



IT TAKES ALL KINDS

Kelp Forest (Grade 4)

Lesson Overview

Students make close observations of fish adaptations and make predictions about behavior and choice of habitat.

Lesson Rationale

Students are actively engaged in observations of fish and gain an understanding of adaptations and how those adaptations have allowed fish to successfully survive and reproduce in their habitat.

Teacher's Notes

If session 2 needs more time session 3 can be skipped (refer to binder).

My Notes

Key Concept:

Fish come in a great variety of forms, colors, and shapes and these adaptations can be used to predict their habitat and lifestyle.

Time Required:

4 class periods of approximately 40 minutes each.

Subject Area	Interdisciplinary Connection	Resources	Going Further	NJCCCS
Science	<ul style="list-style-type: none"> Use images to show tremendous variety in fish size, shape, color and habitat. Observations will be made to apply to the “Anticipatory Guide” (binder). Fish observations will be recorded on charts and discussed. Presentations of charts will be made to class Fresh fish specimens will be observed by physically handling them. 	30 or more colored pictures of a variety of fish Video of fish Fish posters Markers Chart paper Scissors Tweezers Anticipatory guide about fish (binder) Fish adaptation chart (binder) Fresh fish/ Rubber fish		Standard 5.1 (Scientific Processes) A1, A2, A3, A4, B2 Standard 5.3 (Mathematical Applications) A1, A2, B2, C1, D1 Standard 5.5 (Characteristics of Life) A2, B1, B2
Language Arts Literacy	<ul style="list-style-type: none"> Students view videos on fish from school or teacher library. Documentation directly reflects observations and vocabulary mentioned in videos. Drawings are labeled using prior vocabulary learned. Mini-books are created to provide opportunities to use written language in meaningful ways and to assess writing skills. 	Poster paper Worksheets (binder) Pencils Mini-books		Standard 3.2 (Writing) B5, B6, C1, C4, C11, D1, D8, D12 Standard 3.4 (Listening) B2, B4 Standard 3.5 (Viewing & Media Literacy) A2, A4, A7
Mathematics			During observations of fresh fish specimens, rulers may be used to measure and differentiate between specimens. Patterns can be identified within or between the specimens.	
Social Studies				
Visual Arts	<ul style="list-style-type: none"> Ancient art of fish printing, known as “Gyotaku,” is created from frozen or rubber fish. 	Real or rubber fish Paint Paintbrushes	Shirts or bags may be brought in for printing. Create a class paper quilt	Standard 1.1 (Aesthetics) A1, A2, B1

Subject Area	Interdisciplinary Connection	Resources	Going Further	NJCCCS
	<ul style="list-style-type: none"> • Observations about shape, color and size are made from viewing imagery. • Observational drawings are created from viewing fresh fish specimens. 	Crayons/ craypas Newsprint paper (9"x12" or 12"x18") Rice paper Cardboard	representing the vast array of fish diversity and adaptations.	Standard 1.2 (Creation & Performance) D1, D2, D3 Standard 1.3 (Elements & Principles) D1, D2 Standard 1.4 (Critique) B3 Standard 1.5 (World Cultures, History & Society) A1, A2, B1, B2
Technology		Fish video	Online charts can be created using template. Use of real time data to make inferences as to habitat and characteristics of varieties of fish.	
World Language	There are different varieties of fish found in bodies of water in the world.	Global Maps		Standard 7.2 (Culture) C2, C3
Career Education & Consumer, Family & Life Skills	Students work in a group setting and are encouraged to be positive and open to ideas.			Standard 9.1 (Career & Technical Education) B1 Standard 9.2 (Consumer, Family & Life Skills) A4, B1, B2, B3, B5, C1, C5
Physical Education				

RED FISH ROUNDUP

Kelp Forest (Grade 4)

Lesson Overview

The ocean is a filter that only allows certain light to penetrate at certain depths allowing fish and other organisms to hide from predators and assist them in hunting prey.

Lesson Rationale

Students learn a fun and unique way about light and how it penetrates water at different depths providing fish with camouflaged.

Teacher's Notes

If possible, try to have more than one adult facilitate the "Wavelengths" demonstration to check for understanding.

My Notes

Key Concept:

Some fish hide from predators at depth by using camouflage color.

Time Required:

3 class periods of approximately 40 minutes each.

Subject Area	Interdisciplinary Connection	Resources	Going Further	NJCCCS
Science	<ul style="list-style-type: none"> • Prior knowledge is gained by having students question and discuss in pairs. • Participate in hands on activities to refract light through water and experiment with color, light and rainbows. • Goggles with blue cellophane are used to stimulate underwater light conditions showing that some fish use camouflage color to hide from predators. • Light is refracted through a glass-baking dish to project a rainbow. 	Rope Rainbow drawing Glass baking dish Mirror Water Drawing paper Colored pencils Cardstock Scissors Ruler Seven colors (ROY G. BIV) Goggle pattern Blue cellophane String/ yarn Masking tape Staples Fish posters (optional) Wavelength worksheet (binder) Red construction paper	Kelp forest slide show Repeat “The Dive” experiment using green cellophane. “Color filters (binder)	Standard 5.1 (Scientific Processes) A1, A2, B1, B2 Standard 5.3 (Mathematical Applications) A1, D1 Standard 5.5 (Characteristics of Life) B1, B2
Language Arts Literacy	Active listening skills are built on by pairing off and holding discussions based on prior knowledge.			Standard 3.4 (listening) A1, A3, B2
Mathematics	<ul style="list-style-type: none"> • Estimated measurements are made between the “high” and “low” crest of the “wavelengths” demonstration. • Standard units of measurement are used to measure and divide discs into seven equal parts to create color spinners. 	Pencil Paper		Standard 4.1 (Number & Numerical Operations) A1 Standard 4.4 (Data Analysis, Probability, & Discrete Mathematics) A2, B2, C4

Subject Area	Interdisciplinary Connection	Resources	Going Further	NJCCCS
Social Studies				
Visual Arts	Sketches made from observing the “Wavelengths” demonstration help students make conclusions about long and short wavelengths.	Drawing paper Pencil	Build a diorama	Standard 1.5 (History/ Culture) A2
Technology			Virtual family vacation	
World Language			Different bodies of ocean have different depths and animals.	
Career Education & Consumer, Family & Life Skills	Consideration is given to others by being actively engaged in listening and discussion.			Standard 9.2 (Consumer, Family, & Life Skills) A1, A2, A3, A4, C1, C5
Physical Education				

BUILD A KELP FOREST

Kelp Forest (Grade 4)

Lesson Overview

Students research kelp forest organisms and make presentations to the class as a culmination of the following activities:

- Thought Swap Circles
- The “Virtual” field trip
- Researching the Classroom Kelp Forest
- Luck of the Draw

Lesson Rationale

Students are actively engaged in a fun, scientific and artistic way to learn about different organisms that make up the habitat of the kelp forest.

Teacher’s Notes

Group work is to be guided by the teacher or student (depending on the dynamic of the class). Teacher is to guide the use of the “field note” journal to ensure valid notations.

My Notes

Key Concept:

Kelp forests are home to many different kinds of organisms that interact with one another as predators, prey or competitors.

Time Required:

4 class periods of approximately 40 minutes each.

Subject Area	Interdisciplinary Connection	Resources	Going Further	NJCCCS
Science	<ul style="list-style-type: none"> A “virtual” field trip is taken that allow students to act as “scientists” by observing and documenting the kelp forests. Kelp is influenced by temperature, nutrients, weather conditions, animals and competition from other species of algae Organisms are placed in the correct zone or niche in 3D kelp forest. Exhibit labels depict organism/ location studied. Connect organisms in kelp forest to show ecological, relationships. 	Poster paper Paper / journals Pencils Colored pencils/ markers Radish Index cards/ Presentation cards Media/ Literacy (books, websites) Yarn Kelp forest information cards (binder) Computer/ internet		Standard 5.1 (Scientific Processes) B1, B2 Standard 5.3 (Mathematical Applications) A1 Standard 5.5 (Life Science) B1, B2
Language Arts Literacy	<ul style="list-style-type: none"> Active listening skills are built on by holding short discussions about kelp forests. Media and Literature are viewed to gain reference and information. 	Paper Pencils Visual prompts (slides, pictures, music, etc) Reference books/ websites Computer/ internet		Standard 3.3 (Speaking) A2, A3, B4, B5, B6, C3, C4 Standard 3.4 (Listening) A1, A3, B2, B3 Standard 3.5 (Viewing & Media Literacy) A5, A7
Mathematics	<ul style="list-style-type: none"> Sizes of animals are estimated to fit the scale of the 3D kelp forest. Monitor kelp growth per day as compared to a land plant such as a radish. 	Rulers Radish Pencils Paper Chart paper		Standard 4.1 (Number & Numerical Operations) C3 Standard 4.2 (Geometry & Measurement) A1, D1 Standard 4.5 (Mathematical Processes) A1
Social Studies	Survival of kelp in different bodies of water. Effects of different climates in different coastal regions around the world.	Coastal maps		Standard 6.6 (Geography) A5, B1, B2, C1

Subject Area	Interdisciplinary Connection	Resources	Going Further	NJCCCS
Visual Arts	Sounds of the surf/ Ocean/ or classical music are played along with visual prompts. Build a 3D kelp forest. A “gallery” walk is taken to view and discuss other students’ illustrations of the kelp forests.	Picture cut outs from magazines/calendars Markers, colored pencils, paint Music- “Giant Kelp Forest” song (binder)		Standard 1.2 (Creation & Performance) D1, D2, D3 Standard 1.3 (Elements & Principles of Art) B1, B2, B3, D1, D2 Standard 1.4 (Critique) B3
Technology	Slides shows and media sources used to create virtual field trip. Real time data to observe kelp forests in aquariums.	Websites Monterey Bay Aquarium live kelp forest exhibit camera http://www.mbayaq.org/efc/...cam_menuasp Kelp forest habitat with excellent sea otter information http://www.mbayaq.org/media/...all_about_otters/whatsanottter01.html Video Slide images Audio tape of ocean sounds Tape player		Standard 8.1 (Computer & Information Literacy) A1-9 B1-10
World Language	Kelp forests are presented depicting global location and research found.	Chart paper Markers/ colored pencils		Standard 7.2 (Culture) C2, C3
Career Education & Consumer, Family & Life Skills	Students work in a group setting and are encouraged to be positive and open to ideas.			Standard 9.1 (Career & Technical Education) B1, B2, B3 Standard 9.2 (Consumer, Family & Life Skills) A1, A2, A4, B1, B2, B3, B5, C1, C2, C5
Physical Education				