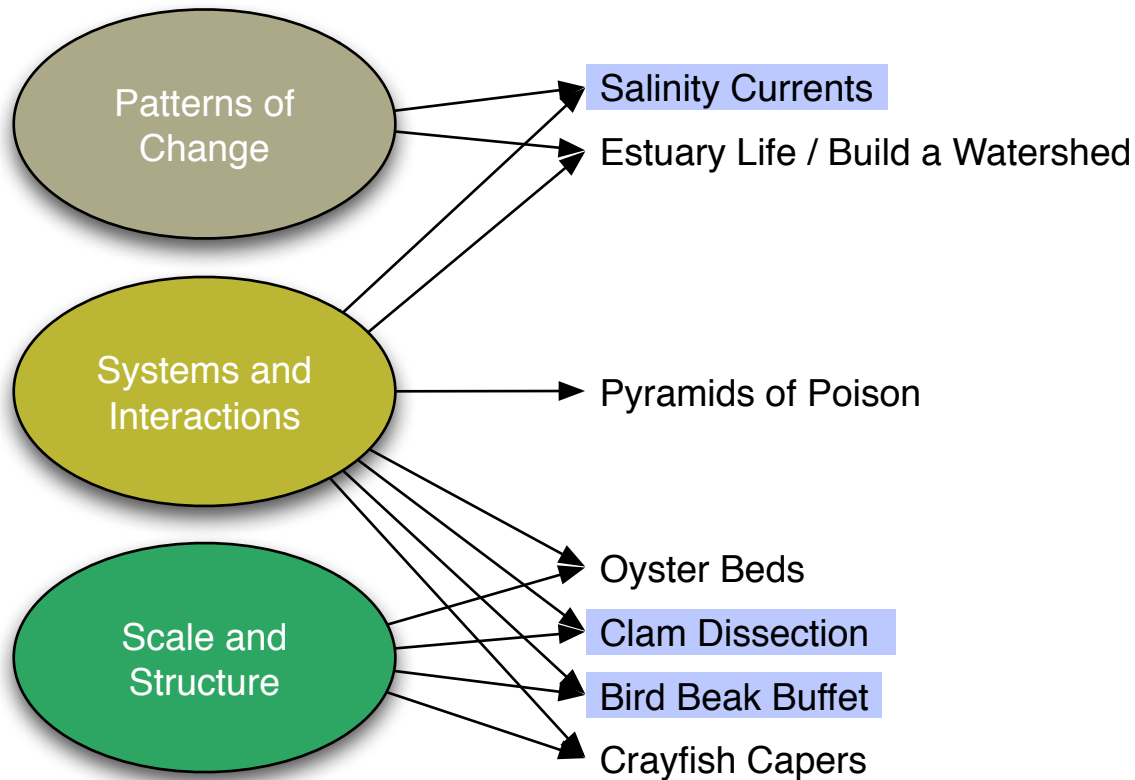


WETLANDS

Grade 3

CONCEPT MAP

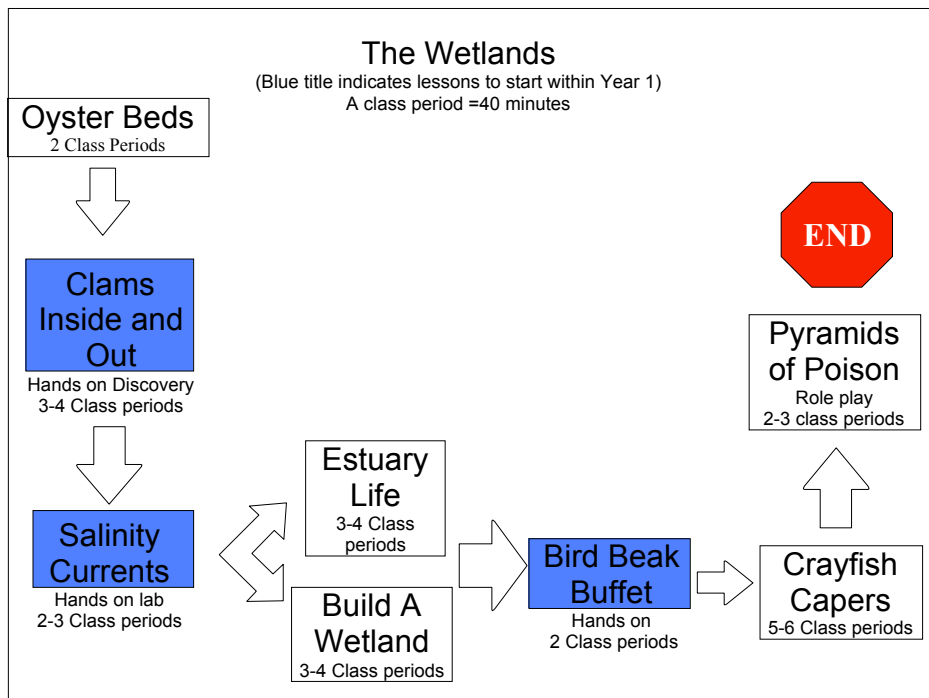


Highlighted text denotes recommended first year lessons

The Wetlands

Flow Chart

Grade 3 MARE



SALINITY CURRENTS

Wetlands (Grade 3)

Lesson Overview

The Salinity Currents activities demonstrate how dynamic an estuary is. Students discover that a difference in the salt content (and density) in water can create currents. These currents, along with the abundance of nutrients, make estuaries very rich and diverse places to support varying species.

Lesson Rationale

This activity will help students realize how dynamic estuaries are just based on the meeting of salt water and fresh water. With the extension lessons students will make the connection as to how important and delicate this balance is in nature.

Teacher's Notes

In Session 1, students discuss and observe about two unknown liquids. Session 2, students use the information from Session 1 to make their own currents with a small group. This session(2) goes much smoother with a teacher demonstration before the students experiment on their own. If possible, do Session 2 outdoors to minimize spills and cleanup.

My Notes

Key Concepts:

- Salinity is a measure of the amount of salt dissolved in a liquid.
- Fresh water will float on top of saltier water.
- Fresh water is less dense than salt water
- Salinity currents can form when fresh water from the land and salt water from the ocean meet in an estuary.

Time Required:

2 to 3 class periods

Subject Area	Interdisciplinary Connection	Resources	Going Further	NJCCCS
Science	Experimentation Hypothesis Data Collection Predictions Lab safety	Glass Bottles-12 to 16 oz size. Enough for each pair of students to get 2. Kosher salt Food Coloring Globe with currents marked Chart paper Transparencies	“Lets Try It Again” “Currents Around the World” “Field Trips” “Gone Fishing” “Stream Table”	Standard 5.1 (Scientific Process) A.1, A.2, A.3, A.4, B.1, B.2, C.1, C.2
Language Arts Literacy	Forming ideas Think-Pair-Share Thought Swap		Field Guides, Fish species books, Estuary creatures books, etc.	Standard 3.2(Writing) A.3, C.1, C.2, C.5, D.9 Standard 3.3(Speaking) A.1, A.2, A.3, A.4, B.1, B.2 Standard 3.4(Listening) A.1, A.2, B.1, B.3
Mathematics	Data collection and analysis Measuring			Standard 4.2 (Geometry & Measurement) A.1, B.1, D.1, D.2, D.3 Standard 4.4(Data Analysis) A.1, A.2
Social Studies			Discussion about how pollution gets to the estuaries and its impact. Global location of possible estuaries based on fresh vs. salt water coming together. Use of globe.	Standard 6.2(Civics) E.5 Standard 6.6(Geography) A.1, A.5, A.6, B.2

Subject Area	Interdisciplinary Connection	Resources	Going Further	NJCCCS
Visual Arts			Sing-a-long—"Water Cycle Boogie" by the Banana Slug String Band from the Slugs at Sea recording.	
Technology				
World Language				
Career Education & Consumer, Family & Life Skills	Group discussions Teamwork Communication among peers			Standard 9.1 (Career & Tech Ed.) B.1, B.2, B.3 Standard 9.2 (Consumer, Family & Life Skills) C.1, C.2, C.3, C.5
Physical Education	Group discussions Teamwork Communication among peers		Demonstrate, physically, the movement of different currents by having the students wear different colored pinnies and moving about the gym floor.	Standard 2.2 (Integrated Skills) E.1, E.2, E.3, E.4, E.6

CLAMS INSIDE AND OUT

Wetlands (Grade 3)

Lesson Overview

Session 1, Clamming Around, students share prior knowledge about clams and teacher assesses what they already. Session 2, Bivalve Booklets, students create an anatomy guide that will help them identify the parts of the clam. Session 3, Hands-On Clam, is the actual dissection of the clam.

Lesson Rationale

This lesson will explore the process of an actual dissection. It follows basic scientific method and will allow students to understand body systems and anatomy of the clam.

Teacher's Notes

This lesson is 3-4 class periods long but can be broken down into several smaller lessons. The actual dissection is during session 3, but students will need the background information of session 2(Bivalve Booklet) in order to identify key parts of the clam in the dissection. Also, the dissection could be teacher-guided or students-at-their-own-pace.

My Notes

Key Concept:

Each animal in a wetland has special body parts and ways of behaving which are adaptations to survive and be successful in their habitat.

Time Required:

3 to 4 class periods

Subject Area	Interdisciplinary Connection	Resources	Going Further	NJCCCS
Science	Respect toward living things Scientific process Clam Anatomy Organism Classification Animal Adaptation Safety	Chart paper Bivalve Booklet printouts Clam anatomy transparency Dissection Outline	Students may want to dissect or observe other bivalves or mollusks have some available for those students. Touch/observation tanks with an assortment of mollusks. Online virtual dissection (Google: “virtual dissection clam” for links)	Standard 5.1(Scientific Process): A.1, A.2, B.1, C.1, C.1 Standard 5.2(Science & Society): A.1 Standard 5.3 (Mathematical Applications): A.1, A.2, B.1, .B.2, C.1 Standard 5.5(Life Science): A.1, A.2, A.3, A.4, B.1, B.2
Language Arts Literacy	Bivalve Booklet could have the proper format of a reference book(i.e. Title Page, TOC, page numbers, etc) Students may want to journal their experience.	Examples of Field Journals or Guides. “Coffee Table” books about shells. Virtual dissection in a storyboard or procedural layout. Sentence strips. Lined Paper Pencils Assorted Seafood Menus	Have other books and materials about different bivalves or mollusks available. Students could compose a story about a clam and it’s daily life. (include ideas such as pollution and it’s effect on the clams body systems) Research projects including topics such as: Mollusks living near hydrothermal vents, little known mollusks(Giant Squid), poisonous mollusks, etc.	Standard 3.1(Reading): A.1, A.2, A.3, E.3, E.4, F.3, F.5, G.3, G.11, G.14, H.2 Standard 3.2(Writing): A.1, A.3, A.6, B.4, C.5, D.3 Standard 3.3(Speaking): A.1, A.2, A.3, A.4, B.1, B.2, C.1, C.2, C.3, D.1 Standard 3.4(Listening): A.1, A.2, B.1, B.2, B.3 Standard 3.5 (Viewing & Media Literacy): A.1, A.2
Mathematics	Students use indexes and glossaries to find examples of shells in different books. Students form parallel lines during Thought Swap activity Sketch and Diagram clams to be labeled and measured using various instruments and dimensions. Identify patterns of size or kind of shell or weight Following a sequence of instructions to complete the Bivalve Booklet.	Measuring instruments (ruler, string, scales, etc.) Assorted shells for sorting and identifying	Number prefixes(“bi”=2, etc) Have students graph their measurements and explain their results to a group or the class.	Standard 4.1 (Number & Numerical Operations): A.5, A.6, C.2, C.3 Standard 4.2 (Geometry & Measurement): A.1, A.2, B.2, D.1, D.2, D.3 Standard 4.4 (Data Analysis, Probability & Discrete Mathematics): A.1, A.2, C.1, C.2 Standard 4.5

Subject Area	Interdisciplinary Connection	Resources	Going Further	NJCCCS
				(Mathematical Processes): A.1, B.1, B.2, B.4, C.1, C.3, C.4, E.1
Social Studies	How have mollusks been used by different people throughout time and in different locations? What have shells been used for? How did people use them? What mollusks do we eat?		Research project on different cultures who have used shells for currency, trade, religious reasons etc. Which cultures of today use shells? How and why? Great opportunity to connect to Native American cultures(look toward North (Canada) and South (Mexico, Perú, Belize etc) American cultures also)	Standard 6.2(Civics) E.1, E.8, E.9, E.10 Standard 6.4(US & NJ History) A.2 Standard 6.6 A.1, A.5
Visual Arts	Bookmaking Presentation			Standard 1.1(Aesthetics) B.1, B.2 Standard 1.2 (Creation & Performance) D.2, D.3
Technology	Please refer to Science listed above.			Standard 8.2(Technology Education) A, B, C
World Language			Number prefixes(“bi”=2, etc) Identify scientific terms that connect with Latin What do other languages use to say the word “clam”? Are there recipes from other countries & cultures that have clams as an ingredient? Create a menu from different countries that include mollusks in their recipes.	Standard 7.2(Culture) A.1, C.1

Subject Area	Interdisciplinary Connection	Resources	Going Further	NJCCCS
Career Education & Consumer, Family & Life Skills	Teamwork Thought Swap			Standard 9.1(Career & Tech Ed) B.2, B.3 Standard 9.2 (Consumer, Family & Life Skills) A.4, B.1, B.2, B.3, B.4, B.5, C.1, C.2, C.3, C.5
Physical Education	Dissection Lab setup safety Teamwork during activities			Standard 2.1(Wellness) D.5, E.1 Standard 2.2(Integrated Skills) E.2, E.4

BIRD BEAK BUFFET

Wetlands (Grade 3)

Lesson Overview

Students will discover that although they may view a scene wherein many different species of shorebirds feed, they rarely compete for the same food. Students will gain an understanding of the concept called “resource partitioning” through an interactive modeling activity called Bird Beak Buffet.

Lesson Rationale

Students will find that different species of shorebirds are adapted to feeding on specific types of food. Many times this food source does not interest other species of shorebirds and allows for many different species of shorebirds to inhabit a given ecosystem.

Teacher’s Notes

This lesson is a great way to guide the students into the understanding of “resource partitioning”. Session 1 is a video journey. Session 2 is the actual Bird Beak Buffet activity. After your students complete this activity, ask them(or a few of them) to teach another class or group of students.

My Notes

Key Concept:

Different types of shorebirds can feed together in one area because each type is adapted to feed on different types of prey. (This is called resource partitioning.)

Time Required:

2, maybe 3, Class Periods

Subject Area	Interdisciplinary Connection	Resources	Going Further	NJCCCS
Science	Students participate in observation of shorebird species. Leading questions are posted to drive the students' inquiry. Students model the behavior of shorebirds while consuming. Students graph their work. Students gain an understanding of the food chain.	Shorebird videos and photos. Large carpet or carpeted area to perform the Bird Beak Buffet. 30 Paper cups 150 each of: pennies, round toothpicks, rubber bands. 10 each of: spoons, tweezers(or clothespins) and chopsticks.	Have students identify specific shorebird species and match what type of bill they have. After the activity, as a student or group of students to teach this lesson to another group or class. Students could identify different species of animals and determine what type of food they consume based on their mouth/bill structure.	Standard 5.1 (Scientific Process) A.1, A.2, A.3, A.4, B.1, B.2 Standard 5.3 (Mathematic Application) A.1, A.2, A.3, C.1, D.1 Standard 5.5 (Characteristics of Life) A.1, A.2, A.3, B.1, B.2 Standard 5.8(Earth Science) B.2
Language Arts Literacy	Thought swap T-chart: what do we already know about birds/what we want to find out about birds. Group discussion	Chart paper, or large pieces of paper for T-chart. Lined paper. Writing implements.	Students could write a short story about the shorebirds of the estuaries, include topics such as competition, respect, resource partitioning, etc.	Standard 3.1(Reading) E.4, G.3, H.2 Standard 3.2(Writing) A.3 Standard 3.3(Speaking) A.1, A.2, A.3, C.1, D.1 Standard 3.4(Listening) A.1, A.2, B.2, B.3
Mathematics	Data collection Tabulation Data recording Graphing Group work Prediction Computer data manipulation and graphing	Large graph paper Letter size graph paper Writing tools Graphing software, (MS Excel works great)	Use MS Excel to graph the data on the computer. Create different types of graphs to display results of data collection and tabulation	Standard 4.1(Number & Numerical Process) A.1, A.5, A.6, B.1, B.3, B.7 Standard 4.3 (Patterns & Algebra) C.1, D.2 Standard 4.4(Data Analysis) A.1, A.2, B.2, C.1, C.2 Standard 4.5 (Mathematic Process) A.1, A.2, A.3, A.5, B.1, B.4, C.3, C.4, E.1, E.3, F.2

Subject Area	Interdisciplinary Connection	Resources	Going Further	NJCCCS
Social Studies			Ask students to compare the shorebirds' resources to some of human kind's resources. Include the idea of Supply & Demand	Standard 6.5(Economics) A.5 Standard 6.6(Geography) E.2
Visual Arts			Have students illustrate a scene that includes the different types of shorebirds they have observed. Create 3 dimensional graphs, use different colors, lines etc. Present graphs to the class.	Standard 1.1(Aesthetics) A.3 Standard 1.4(Critique) B.1, B.3
Technology			Use other graphing software to apply data results. Use the internet to find other types of shorebirds and attempt to identify their possible food sources.	Standard 8.1(Computer and Information Technology) A.5, A.8
World Language			Connect by using birds from different parts of the world. Identify using a map or globe different locations on earth where estuaries can be found. This lesson could be taught entirely in Spanish, introduce new vocabulary, following instructions, etc.	Standard 7.2(Culture) A.2, C.1
Career Education & Consumer, Family & Life Skills	Group discussion Teamwork			Standard 9.2(Consumer, Family & Life Skills) A.4, C.5, E.3
Physical Education	Group discussion Teamwork			Standard 2.2 (Integrated Skills) A.3, A.4