Children's Literature —
Passage to the Sea

A Guide for Teachers
by
Norma Bagnall
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Norma Bagnall

Ruth González developed the following activities: Blah, Fun Folders, Locate It, Match-Up Card Game, Seashell Computer, Sea Vessel Match-Up, Shark or Sea Creatures Game, Shell Wheels, Ship’s Cross-Section, Stained Glass Rainbow, Stuffed Sea Animals.
Preface

Although the United States developed as a sea nation, American education has concentrated primarily on the land. It has not stressed the importance of our marine resources, either for today, or, perhaps more importantly, for the future. The fact is, however, that our standard of living depends on the quality and supply of fresh water and on the carefully planned use of the sea and its resources.

It is important that children learn an appreciation for our marine resources early. Ideally, first-hand experiences might be more beneficial, but inland children cannot be denied the opportunity of learning of the beauty, mysteries and importance of the sea.

Fortunately, there is an available alternative — excellent literature written and illustrated by people who not only know and love the sea but who are capable of transferring that love to the written page to share with others. This booklet introduces some of this literature and provides a guideline for teachers on how to integrate marine-related children's literature into the classroom.
# Table of Contents

## Introduction .................................................................................................................. 1

## Book Synopses ............................................................................................................... 2
  - Spill, by Chester Aaron ......................................................................................... 2
  - The Craft of Sail, by Jan Adkins ......................................................................... 2
  - The Eyes of the Amaryllis, by Natalie Babbitt ................................................... 3
  - Island of the Blue Dolphins, by Scott O'Dell ...................................................... 3
  - Noah's Ark, by Peter Spier ................................................................................... 3
  - The Cay, by Theodore Taylor ............................................................................... 4
  - Christopher Columbus, by Pietro Ventura ......................................................... 4
  - Seashore Story, by Taro Yashima ...................................................................... 4

## Interest Center Activities ............................................................................................. 5
  - Beneath the Mast ................................................................................................... 6
  - Blah ....................................................................................................................... 7
  - Browsing Table ..................................................................................................... 7
  - Concentration ....................................................................................................... 8
  - Discovering Latitude and Longitude ................................................................... 8
  - Elementary Physics and Engineering .................................................................. 9
  - Fish Mobiles ......................................................................................................... 9
  - Flap Bingo ............................................................................................................ 10
  - Flannelboard Ark .................................................................................................. 10
  - Flotation Experiments ......................................................................................... 11
  - Food Chain Game ................................................................................................ 11
  - Fun Folders .......................................................................................................... 12
  - Hurricane ............................................................................................................... 12
  - Hurricane Tracking .............................................................................................. 13
  - International Flag Alphabet ................................................................................ 13
  - Knot Tying ............................................................................................................ 14
  - Listening Center ................................................................................................... 14
  - Locate It ............................................................................................................... 14
  - Match-Up Card Game .......................................................................................... 15
  - Model Island or Beach ......................................................................................... 15
  - Net Making ........................................................................................................... 16
  - Refrigerator Carton Ship ..................................................................................... 16
  - Sand Painting ........................................................................................................ 16
  - Seashell Computer .............................................................................................. 17
  - Seashell Identification ......................................................................................... 17
  - Sea Vessel Match-Up ............................................................................................ 18
  - Shark or Sea Creature Game ............................................................................... 18
  - Shell Wheels ........................................................................................................ 19
  - Ship's Cross-Section ............................................................................................ 19
  - Slide Center .......................................................................................................... 19
Introduction

The marine awareness learning package is centered around books which use the sea as their themes. Brief synopses of eight books are included as well as descriptions of how they can relate to learning center activities.

A major feature of the learning package is the interest centers set up in the classroom. These include activities such as shell identification, knot tying, net making, marine flag identification, latitude and longitude study, creative art and survival skills. Students select the activities in which they want to participate as they explore the process of marine education.

Neither the listing of books nor the learning activities is meant to be comprehensive. This marine awareness learning package should be considered a starting point for a program that can be expanded and adapted to each individual classroom need. Completion of the suggested activities should foster additional activities as teacher and students pursue marine education further. One obvious expansion will occur when a teacher has a favorite sea story to read to the class; teachers will find many of the learning activities included in this package suitable for those favorite books.

Regardless of the grade level, it is best to read the selected book before arranging the interest centers. As the students listen to the story, they will be motivated to try to duplicate the characters' activities or to test the principles or theories expressed by the authors.

For example, the blinded protagonist in *The Cay* encourages young readers to experiment with some of the tasks undertaken by Phillip in the story. Also, because of the careful description of the cay's location in the story, it seems natural to bring an atlas or globe into the classroom and ask questions which lead students to learn about latitude and longitude.

Similarly, *The Craft of Sail* generally makes young readers want to test the engineering principles presented, to try tying the knots illustrated and to sail a ship, even if the ship is made of soap and sailed in a plastic dishpan.

The interest centers are extensions of the books and designed to enhance the students' ideas of the oceans and beaches. Teachers must decide what kind and how many interest centers will be set up. Space limitations will be a determining factor, as will the ages and capabilities of the students. It is one way, however, that most of the room can be used: floor space in a corner becomes an excellent place to set up a slide show display with a piece of paper taped to the wall for a screen.

Not all teachers will be comfortable with interest centers throughout the classroom. An alternative arrangement is to set up only two or three centers, self-contained as in any interest center, as a place where students can go for independent work once regular classroom assignments are completed.

There are some general interest center guidelines for teachers:

1. Decide what you want your students to experience and learn.
2. Decide what you want your students to be able to do as a result of participating in each interest center.
3. Make each center attractive, appealing and inviting.
4. As a general rule, have all materials and supplies needed for each activity available within that interest center. This can be adapted to particular situations: some teachers prefer to keep scissors, pencils, markers, etc., in a central location, or the overhead projector or film strip projector may need to remain in one place.
5. Make instructions clear and simple. Students, even the poorest readers, should be able to work independently with very little help from the teacher.
6. Plan a way to review with the students so the material learned may be shared with the whole class.
7. Allow the students time to explore all the interest centers before deciding which activity they will pursue. Once that decision is made, however, encourage them to remain in the center until they have completed the activity.

This marine awareness learning package is divided into four sections: Books, activities, illustrations and questionnaires and sources of additional materials. Each activity is related to a specific grade level and book, includes a list of required materials and has preparatory suggestions for the teacher and instructions for the students.

The illustrations and questionnaires are designed for easy duplication for transparencies or for ditto or stencil masters. This allows the teacher to provide sufficient copies for use in the interest centers.
The eight books included have been used with the interest center activities which follow. These eight were selected because they represent a variety of ages and interests.

The setting varies in time from the flood more than 4,000 years ago to a contemporary oil spill in the 1970s. Locations include the Atlantic, the Pacific, the Gulf of Mexico, South American and Japanese coasts and the shipping lanes from Europe to America.

These books are representative of many genres written for children: there are information books, fantasy, history and legends. The activities designed for use with these books should be readily adaptable to others similar in kind by individual teachers.

Spill
Chester Aaron

Teenagers Judy and Jeff Taylor and their parents live on a small ranch above Bolinas, California. Mr. Taylor works for the Audubon Canyon Ranch, Mr. Taylor raises sheep and Judy cares for injured birds and animals. Jeff is going through a rebellious stage, he is arrogant and opposed to many of his family's values.

An oil spill on the coast caused by the collision of two oil tankers encompasses the Taylor family and their neighbors. They work around the clock to save birds injured by the oil and to build a boom to protect their lagoon from further oil seepage. The family incidents are overdrawn and the weakest part of the book; otherwise, it is a realistic telling of people concerned about the environment.

Specific activities that adapt well to this book are:
- Beneath the Mast (6)
- Blah (7)
- Food Chain Game (11)
- Listening Center (14)
- Model Island or Beach (15)
- Sand Painting (16)

The Craft of Sail
Jan Adkins

Jan Adkins writes, illustrates and designs his books. He counts words, even letters, to make certain each page is aesthetically pleasing. He also has a deep love for the sea. The result of a careful and interested effort is a rich and interesting experience for the reader.

This book, intended to be a beginning text for would-be sailors, includes engineering principles, nautical language, various kinds of sails and sailing ships, knot tying and charts. All directions are written and illustrated in a way even the youngest reader can understand. The book can be combined with other sea literature (the sailor's knots on pages 46-48 are excellent guides for children learning to tie their own knots) or it can be used as a resource for independent study. The introduction carefully defines how the sailboat is in harmony with the wind and wave and that because of this, the sailboat moves with the forces of nature rather than trying to overcome them.

Specific activities that adapt well to this book are:
- Beneath the Mast (6)
- Blah (7)
- Concentration (8)
- Discovering Latitude and Longitude (8)
- Elementary Physics and Engineering (9)
- Flag Bingo (10)
- Flotation Experiments (11)
- Hurricane Tracking (13)
- International Flag Alphabet (13)
- Knot Tying (14)
- Match-Up Card Game (15)
- Refrigerator Carton Ship (16)
- Sea Vessel Match-Up (18)
- Ship's Cross-Section (19)
- Soap Carving (20)
- Wood Construction (22)

Ages 8 and up
The Eyes of the Amaryllis
Natalie Babbit

This is the story of two Jennys — Geneva Road and her grandmother, Jenny has been summoned to her grandmother's house because Gran has broken her ankle. Jenny lives with her parents 30 miles from the Atlantic coast where Gran lives but she has never been to the ocean.

The story, set in the 1880's, deals with the death of Jenny's grandfather 30 years before in a storm off the coast and with the fantasy which surrounds the sinking of the Amaryllis. It bridges a double generation gap when Jenny confesses she doesn't care much for cooking and Gran acknowledges she doesn't either. So they decide, "We shall do as little of it as we possibly can without starving" (page 25).

The prologue gives a marvelous glimpse of the Atlantic and of human behavior as Babbit gives young Jenny her first view of the ocean, and the reader experiences its might and splendor through her eyes.

Specific activities that adapt well to this book are:
- Hurricane (12)
- Hurricane Tracking (13)
- Listening Center (14)
- Net Making (15)
- Sand Painting (16)
- Seashell Computer (17)
- Seashell Identification (17)
- Sea Vessel Match-Up (18)
- Shell Wheels (19)
- Slide Center (19)
- Soap Carving (20)
- Stuffed Sea Animals (21)
- Transparent Film Art (21)
- Wood Painting (22)

Ages 11 and up
Farrar, Straus and Giroux, New York, 1977

Noah's Ark
Peter Spier

There is a translation of "The Flood" by Jacobus Reuven, 17th Century Dutch poet, in the beginning of the book. The rest is wordless, with the story told through Spier's inclusion of much detail and humor in his illustrations. It invites much re-reading to absorb the complex incidents and careful sketching which Spier has included.

There is much in the book that invites interpretation by young artists. The ending is particularly apt as Noah, on his knees, is replanting the sodden earth while the beginnings of a rainbow frame him, the animals and his family.

Specific activities that adapt well to this book are:
- Fish Mobiles (9)
- Flannelboard Ark (10)
- Listening Center (14)
- Refrigerator Carton Ship (16)
- Ship's Cross-Section (19)
- Slide Center (19)
- Stained Glass Pictures (20)
- Stained Glass Rainbow (20)
- Stuffed Sea Animals (21)
- Transparent Film Art (21)
- Wood Construction (22)
- Wood Painting (22)

Ages 4 and up
Doubleday, Garden City, New York, 1977

Island of the Blue Dolphins
Scott O'Dell

This story is based on the true account of an Indian girl isolated on an island off the coast of California for 18 years. Karana jumped off the ship when missionaries left with her people because her brother, Ramo, was not aboard. She knew he was somewhere alone on the island — so the ship sailed without her.

The book chronicles her growth and survival, alone, on the island. It tells of her need for companionship, for beauty and, at the end, for acceptance.

Specific activities that adapt well to this book are:
- Discovering Latitude and Longitude (8)
- Fun Folders (12)
- Knot Tying (14)
- Listening Center (14)
- Model Island or Beach (15)
- Net Making (16)
- Sea Vessel Match-Up (18)
- Soap Carving (20)
- Stained Glass Pictures (20)
- Stuffed Sea Animals (21)
- Survival Skills (21)
- Transparent Film Art (21)
- Weaving (22)

Ages 10 and up
Houghton, Mifflin Co., Boston, 1960
The Cay
Theodore Taylor

This is a story of survival and of human interrelationships. Phillip Enright lives with his father and mother in Willemstad on Curacao at the beginning of World War II. His mother is frightened for his safety once enemy submarines are sighted in the area and she and Phillip board a small freighter to take them back to the United States. The ship is torpedoed and sunk. Phillip receives a blow on the head and, when he recovers consciousness, he is on a raft with an old, black man named Timothy and a cat. Later Phillip becomes blind. This is the story of Timothy’s and Phillip’s survival on the raft and later on a Caribbean cay.

Specific activities which adapt well to this book are:
- Blah (7)
- Concentration (7)
- Discovering Latitude and Longitude (8)
- Flag Bingo (10)
- Food Chain Game (11)
- Fun Folders (12)
- Hurricane (12)
- Hurricane Tracking (13)
- International Flag Alphabet (13)
- Knot Tying (14)
- Locate It (14)
- Match-Up Card Game (15)
- Net Making (16)
- Seashell Identification (17)
- Shark Game (18)
- Slide Center (19)
- Survival Skills (21)
- Transparent Film Art (21)
- Weaving (22)

Ages 10 and up
Doubleday, Garden City, New York, 1969

Seashore Story
Taro Yashima

In the Japanese legend, Urashima, the fisherman, saved the life of a sea turtle. In gratitude, the turtle carried Urashima to the bottom of the sea where he lived many days in a castle more beautiful than he had ever imagined. There came the day when he yearned to return to the earth, to his family and the warmth of the sun. When he did, he found his family and his home gone, only the mountain remained the same.

The ethereal colors in Yashima’s paintings can inspire young artists to explore various art media in their interpretations of seascapes.

Specific activities that adapt well to this book are:
- Fish Mobiles (9)
- Listening Center (14)
- Sand Painting (16)
- Sea Creature Game (18)
- Shell Wheels (19)
- Stained Glass Pictures (20)
- Stained Glass Rainbow (20)
- Stuffed Sea Animals (21)
- Survival Skills (21)
- Transparent Film Art (21)
- Wood Painting (22)

Ages 4 and up
Viking Press, New York, 1967

Christopher Columbus
Piero Ventura

This is an information book about Columbus, his ships and the voyage to the new world. It includes carefully detailed full-color illustrations, such as a cross-section of the Santa Maria and examples of housing in both the old and new worlds. Although the drawings are excellent, the book probably would not hold up well for general classroom use; its binding is weak and not designed for durability.

Specific activities that adapt well to this book are:
- Beneath the Mast (6)
Interest Center Activities

Beneath the Mast 6
Blah 7
Browsing Table 7
Concentration 8
Discovering Latitude and Longitude 8
Elementary Physics and Engineering 9
Fish Mobiles 9
Flag Bingo 10
Flannelboard Ark 10
Flotation Experiments 11
Food Chain Game 11
Fun Folders 12
Hurricane 12
Hurricane Tracking 13
International Flag Alphabet 13
Knot Tying 14
Listening Center 14
Locate It 14
Match Up Card Game 15
Model Island or Beach 15
Net Making 16
Refrigerator Carton Ship 16
Sand Painting 16
Seashell Computer 17
Seashell Identification 17
Sea Vessel Match-Up 18
Shark or Sea Creature Game 18
Shell Wheels 19
Ship's Cross-Section 19
Slide Center 19
Soap Carving 20
Stained Glass Pictures 20
Stained Glass Rainbow 20
Stuffed Sea Animals 21
Survival Skills 21
Transparent Flint Art 21
Weaving 22
Wood Construction 22
Wood Painting 22

Page
Kindergarten
Grades 1-3
Grade 4
Grade 5
Grade 6
Grade 7

NOTE: Some activities are appropriate for ages other than those indicated. Teachers can make necessary adaptations according to individual classrooms.
Basic Supplies for Activities

Large, sharp scissors
White glue
Rubber cement
Colored pencils
Masking tape
Index cards, 3" × 5"
Stapler
Ruler or straight-edge
Three sets of markers:
  1. broad-tipped, permanent
  2. broad-tipped, watercolor
  3. fine-tipped, watercolor
Rubber bands
No. 2 pencils with erasers
Clear contact plastic or
laminating film and machine

1. Print clearly on everything. Cursive or fancy writing
   is difficult for some students to read. Words written
   completely with capital letters are difficult, too.
2. Use simple words when writing directions. Each
   student should be able to understand all directions
   independently.
3. Laminate (or cover with clear contact plastic) all
   materials. The quality, not the quantity, of materials
   is important.
4. Make the materials bright and colorful to appeal to
   the students. Unlined, colored index cards cost only
   10 cents more per hundred than lined, white cards.
   The cost is worth it.
5. Make materials simple rather than ornate. Do not
   confuse students with unnecessary details or
   decorations.

Beneath the Mast
Level: K-4

Materials:
  Plastic bleach bottle, cleaned and dried
  Paper punch
  Knife or scissors
  Plastic tape or fabric
  Notebook rings, one for each set of cards
  Index cards (use different color for each deck)
  Pictures, approximately ¾" × ¾"

Teacher:
1. Decorate the bleach bottle with plastic tape or fabric
   so it looks like a ship.
2. Make a folded cardboard stand, colored to resemble
   waves, so the bottle will stand on its side.
3. Cut a rectangular opening (¾" × 2") in the top side
   of the bottle. Keep the lid on the bottle; the students
   will remove it to check their answers as they
   complete this activity.
4. Cut index cards into T-shapes, making sure the
   bottom strip fits into the opening in the bottle. Write
   a question or glue a picture at the crossbar of each
   "T." Write the answer or picture identification at
   least ¾" below the crossbar.
5. Punch a hole in the upper lefthand corner of the
   cards. When you have completed 10 or 12, clip
   them together with a notebook ring.

Students:
1. Remove the notebook ring from a set of cards.
2. Place each card into the opening in the ship. Identify
   the picture or answer the question.
3. To check your answer, remove the bottlecap and
   peek beneath the mast.
4. Continue until you have completed the entire set of
   cards.

Specific uses with particular books:
Spill — This is a good activity to check knowledge of
 western sea birds. You will need to draw or find
 pictures of birds mentioned in the story, such as the
 pelican, Western Grebe, gulls, etc.
The Craft of Sail — The knots pictured on pages
46-48 adapt well to this activity, as do the chart
 symbols on page 51.
Christopher Columbus — Younger students can
 use this activity to recognize plants of the new world.
 They also can identify the people working on
 Columbus’ ship.
Blah
Level: 4-7

Materials:
- 24 index cards
- Markers

Teacher:
1. Write questions or words to be identified on 20 index cards.
2. Draw or paste magazine pictures on three cards.
3. Make one “blah” card, as ugly or startling as possible.
4. This game is so simple that it may not be necessary to laminate the cards.

Students:
1. Shuffle the cards and place them face down on a table.
2. Choose a player to be first. He or she selects the top card and answers the question or identifies the word. If correct, the player scores one point; if not, no points are scored. Play continues to the left.
3. A picture card is a free card and scores three points.
4. Whenever a player turns up the “blah” card, that player loses and the game is over. The player with the most points wins the game.

Specific uses with particular books:
**Spill**—This can be used with specific questions, such as What is a chiton xanthogrammica (page 84), or How was the oil company working to clean up the oil spill (page 135). It also can be used for bird identification with students identifying pictures or particular characteristics.

**The Craft of Sail**—Kinds and/or parts of sails adapt well to this activity. You, or a student artist, can reproduce the drawings (pages 26-28). An alternative is to use the sailors’ language (pages 24-25) which the students must identify.

**The Cay**—Three sets of cards are possible: one, the different kinds of ships; two, the various foods available; and three, the shells mentioned.

**Christopher Columbus**—Cards depicting food identification and occupation identification can be used in both primary and upper elementary classrooms.

Magazine articles with sea interest
- Seashells
- Brochures and pamphlets about the sea
- Posters (see Low Cost Materials)

Teacher:
1. Place books, magazine articles, brochures and pamphlets on a table with some seashells in an inviting display so students can use their free time to learn about other marine books or special interests that will enhance their marine education.
2. In addition to the eight books referenced, the following may be combined with others of the teacher’s own choosing:
   - Isaac Asimov, *ABC’s of the Ocean*
   - Alice Goudey, *Houses from the Sea*
   - Thor Heyerdahl, *Kon-Tiki*
   - Katherine List, *Questions and Answers about Seashore Life*
   - Millicent E. Selsam, *Animals of the Sea*
   - Millicent E. Selsam, *Birth of an Island*
   - *National Geographic, National Geographic WORLD* and *Texas Parks & Wildlife* will be of interest to students.
   - Appropriate brochures and pamphlets are described in the section on free materials.
3. Only picture books or articles with a number of illustrations are best for the primary grades. In upper elementary classrooms, some advanced reading books can be included and students can be encouraged to check these out for home reading.
   - Picture books also should be displayed because older students enjoy studying the art and frequently do not feel comfortable looking through picture books in the school or public library.

Browsing Table
Level: K-7

Materials:
- Marine-oriented picture books
Concentration
Level: 4-7

Materials:
International flag guide (see appendix)
52 3" x 5" cards, either index cards or white posterboard
Red, blue, yellow and black watercolor markers

Teacher:
1. Using the international flag guide, make a flag representing each letter of the alphabet on 26 cards.
2. Use the remaining cards to write each letter of the alphabet.

Students:
1. Place the cards face down on the table in rows.
2. Choose a player to be first. He or she turns up two cards. If they match (if the flag represents the letter), the player keeps those cards and picks two more.
3. If the cards do not match, they are replaced in the same spots and play continues to the left.
4. The player with the most pairs when time is called is the winner.

Specific uses for particular books:
This activity adapts well to The Craft of Sall, The Cay and Christopher Columbus as described.

Discovering Latitude and Longitude
Level: 4-7

Materials:
Map and information about the Caribbean (mounted on posterboard)
Atlas
Pencils
The Cay
Questionnaires (see appendix)

Teacher:
1. The purpose of this activity is to explore locations, to learn to read maps, particularly in longitude and latitude, and to locate points given in The Cay.
2. Sources for maps are suggested in the Free Materials section of the appendix.

Students:
1. Using the research materials provided, explore the Caribbean and find out how accurate Theodore Taylor is in writing The Cay.

Specific uses with particular books:
The Craft of Sall — Combine the charts and symbols in this book with the information found in an atlas.
Island of the Blue Dolphins — Use maps of the California coast for the activity.
Christopher Columbus — Use either regional maps or a world map with the activity.
Elementary Physics and Engineering
Level: K-5

Materials:
- Small glass bottle, partially filled with water tinted with food coloring
- Paper or plastic soda straws
- Scissors
- or
- One piece of rope about 24 feet long (or two pieces, 12 feet each)
- Heavy weight (a cement block or compact box of books works well)

Teacher:
1. The water and straw experiment demonstrates the Bernoulli effect, that pressure within a moving stream of fluid decreases if the fluid moves faster. This principle explains the lift of airfoils which cause planes to fly. It also explains the way sails work on ships.
2. The second experiment explains the principle of vectors.
3. These two principles explain how the wind works against a sail and how sailors use the principles to make the sailboat go in the direction they choose.

Students:
1. For the first experiment, cut a soda straw almost in half. Bend the straw and insert the lower end in the tinted water.
2. Blow into the upper end and watch the water rise in the lower portion of the straw.
3. For the second experiment, tie the rope around a heavy object, leaving about 10 feet free at each end.
4. If two students of equal strength pull in opposite directions, the weight will not move.
5. If the same two students pull at angles of less than 180°, they can cause the weight to move in a controlled direction.
6. If the student pulls the rope in the same direction, they also can cause the weight to move in a controlled direction.

Specific use with particular books:
The Craft of Sail — The principles are illustrated on pages 10-17 and should be used for reference with all other books. For example, Christopher Columbus can be used in combination for a discussion on sailing ships.

Fish Mobiles
Level: K-4

Materials:
- Scrap strips of paper in any colors
- Scissors
- Markers
- Hole punch
- Yarn

Students:
1. Make a cut with scissors (or tear) in each end of a strip of paper.

![Fish Mobile Cut](image)

2. Fit the cut ends together.
3. Decorate the fish with markers or crayons.
4. Punch a hole in the fish, and string with yarn.
5. Suspend the fish from the ceiling, either individually or several in different sizes to make a mobile.

Specific uses with particular books:
Noah’s Ark — Many kinds and sizes of fish are pictured on the cover and throughout this book which the students can use as examples. One possibility is for the students to use very large strips of paper to make whales.

Seashore Story — Because of the unusual and ethereal paintings in this book, the students may choose to paint their fish. Another idea would be to use gift wrap or other colored or patterned paper to make the fish.
Flag Bingo
Level: 4-7

Materials:
- 7" x 9" white posterboard (one for each student)
- Red, blue, yellow, black markers
- Ruler
- Small pieces of posterboard for call letters
- Washers, or other small objects, for playing pieces
- International flag alphabet guide (see appendix)

Teacher:
1. Xerox the bingo card grid included in the appendix and glue onto posterboard for each student.
2. Fill in each square with an international flag symbol drawn with markers. Make each card different. (A sample card is included in the appendix.)
3. Make alphabet letters on small cards for the caller.

Students:
1. As a letter is called, check to see if it is on your bingo card. Remember it will be represented by a flag rather than the usual alphabet symbol. Check the guide sheet if you are not sure.
2. The first person to cover five squares horizontally, vertically, or diagonally wins the game.

Specific uses with particular books: The Craft of Sail and The Cay, or any others which mention signal flags, are particularly adaptable to this activity as described.

Flannelboard Ark
Level: K-3

Materials:
- Flannelboard
- Ark cut out of brown felt
- Pellon cut into 3" or 4" squares (available at fabric stores; cheapest works best)
- Watercolor markers
- Scissors

Teacher:
1. Copy and enlarge the Noah's Ark in the appendix and cut out of brown felt. Place on flannelboard.

Students:
1. Using markers, draw an animal or fish on the Pellon square to add to Noah's Ark.
2. Cut out the animal or fish.
3. Place the animal or fish on or near Noah’s Ark on the flannelboard.

Specific uses for particular books:
Noah's Ark — In this direct adaption, students populate the ark with animals of their choice. You may choose to make Noah yourself, but do not make him so polished that the students are intimidated.

Christopher Columbus — The students can make the sails for Columbus' ship, then add the people and things stored in the ship.
Flotation Experiments
Level: K-4

Materials:
- Plastic dishpan, half-filled with water
- Paper clips
- Small aluminum disposable pans
- One eyedropper
- Liquid food coloring

Teacher:
1. Involve the students in a general discussion of what things will float:
   a. Will paper clips float?
   b. Will aluminum pans float?
2. Discuss the effects of water pollution.
   Note: These experiments are intended to stimulate thinking among young children. Answers need not be provided; it is more important that students ponder these things and experiment.

Students:
1. Bend one paper clip so it will support a second paper clip. Carefully lower the two paper clips onto the surface of the water. Will the supported one float? Why?
2. See if an aluminum pan will float on the water. Now punch a hole in the bottom of the aluminum pan. Will it still float? Punch two holes in the pan and try again, then punch several holes in the pan. Will it still float? Why?
3. Drop liquid food coloring into the water. What happens when the drop of color enters the water? Does the color stay in one place? Does the same thing happen to bigger bodies of water when waste material is dumped? Should we be concerned about it?

Specific books:
The Craft of Sail, Noah's Ark, Christopher Columbus and Seashore Story work well with these experiments as described.

Food Chain Game
Level: 5-7

Materials:
- Cloth streamers, about 2" x 18", in three different colors
- 24 to 30 plastic sandwich bags
- Plastic produce bags
- Dried beans or styrofoam packing material
- Scoreboard and magic marker

Teacher:
1. This is an outdoor game to illustrate the food chain and show how it can be upset by destroying the natural balance of nature.
2. Mark the sandwich bags with two strips of tape or magic marker at one-inch intervals from the bottom.
3. Mark the produce bags approximately two-thirds from the bottom.

Students:
1. Set boundaries for the playing area and a five-minute time limit.
2. Divide into three teams — Shrimp, Egrets, Alligators — and be a different colored streamer to the wrist, belt loop, etc., to identify team members.
3. Shrimp and Egrets have plastic sandwich bags to represent their stomachs. Alligators, which are larger, use plastic produce bags.
4. Spread the beans, which represent plankton, around the area.
5. Shrimp stomachs are filled when beans or styrofoam reaches the first line on the sandwich bag. Egrets’ stomachs are filled when the captured shrimp stomachs reach the second line on the bag. Alligators’ stomachs are filled when the captured egrets’ stomachs reach the line on the produce bag.
6. Once a player is tagged, he or she is out of the game.
7. One of each species must survive to maintain the ecosystem. Survivors are those left in the game at the end of the time limit whose stomachs (or bags) are filled to the line indicated. Record the number of survivors on the scoreboard.
8. After the first game, players can change one rule to see if the balance of nature can be restored so there will be survivors in each group.

Specific uses with particular books:
Spill — Because this book concerns the destruction of life caused by an oil spill, this game is appropriate as students consider survival techniques.
The Cay — This book deals less with natural survival, but the game is effectively played and understood by students who have discussed nature’s food chain.
Fun Folders
Level 4-7

Materials:
- Paperback activity book (available at most grocery stores)*
- 8 to 10 file folders
- Clear contact plastic
- Scissors
- Construction paper
- Rubber cement
- Watercolor markers
- Wipe-off markers or grease pencil for students
- Facial tissue

Teacher:
1. Cut out one activity page for each fun folder and mount it on colored construction paper with rubber cement. Glue the construction paper to the right inside half of the file folder and cover the activity page with clear contact. Be sure to leave the center fold free.
2. Glue the answer to the left side of the file folder and cover it with a flap of construction paper.
3. Label the activity on the extended edge of the folder, leave the outside of the folder plain.
4. Store in an envelope or box that is easily accessible to students. An empty thermofax box, covered with colored contact, is ideal. Keep each set of fun folders separate.
5. Try to include different levels (easy to difficult) and different interest items (math, reading, puzzles) in each set.

Students:
1. Choose the folders you want to do.
2. Use a wipe-off marker or grease pencil to fill in your answers.
3. Check your answers, then rub off your answers with a damp tissue and return the folder to its case when you are finished.

*Materials used are from The Shark Activity and Game Book by Tony Tallento, Grosset and Dunlap, 1975.

Specific uses with particular books:
Island of the Blue Dolphins and The Cay adapt well to fun folders made with this activity book. Since both include sharks.

Since the activity books are usually inexpensive (less than $1.00), teachers may want to purchase others with sea themes which can be adapted to other books.

Hurricane
Level 4-7

Materials:
- International flag guide (see appendix)
- 53.3" x 5" white posterboard cards (index cards may be used if they are heavy enough so markings do not show through)
- Red, blue, yellow, and black watercolor markers

Teacher:
1. Make a flag representing each letter of the alphabet on 26 cards, using the international flag guide.
2. Use another 26 cards to write each letter of the alphabet.
3. Use the last card to draw the flag symbol for a hurricane.

Students:
1. Two to five may play.
2. Shuffle and deal all cards. This game follows the same rules as "Old Maid," matching letters with their international flag symbols to make pairs.
3. The player holding the hurricane card at the end of the game loses.

Specific uses with particular books:
This activity, as described, adapts to The Eyes of the Amaryllis and The Cay.
Hurricane Tracking
Level: 4-7

Materials:
- Xeroxed copy of hurricane information from encyclopedia
- The Cay
  - Questionnaire on hurricanes (included in appendix)
  - Pencils
  - A chart with newspaper tracking records of past hurricane
  - Hurricane tracking chart (see appendix)

Teacher:
1. Either xerox hurricane information from the encyclopedia or have the book nearby opened to this section. (Author's note: I mounted xeroxed pages from The Book of Knowledge in a heavy folder with a model of hurricane warning flags.)
2. The Cay is used as a reference tool so the students can discuss Theodore Taylor's description of the storm and compare it with an actual storm.
3. A sample hurricane tracking chart is included in the appendix. This can be copied for each student, or a source for free charts is listed in the Free Materials section of the appendix.

Students:
1. Using the reference tools provided, answer the questions about hurricanes.
2. Use the tracking chart to chart the course of an actual hurricane or the one described in The Cay.

Specific uses with particular books:
The Craft of Sails — Although a hurricane is not described, this book gives good information on reading charts and on warning signals (pages 50-59) to use with other books or with a hypothetical hurricane.
The Eyes of the Amaryllis — Students may want to draw in that part of the Atlantic coast where the storm in the book takes place, but actual tracking will need to be for a hypothetical hurricane or from newspaper accounts.
The Cay — Definite wind directions and locations are given in this book. Students cannot track a hurricane as accurately as with newspaper accounts, but they will be able to learn the principles involved.

International Flag Alphabet
Level: 4-7

Materials:
- Sample set of international alphabet flags
- International flag guide
- Scissors
- Rulers
- Rubber cement or white glue
- Construction paper (yellow, white, red, blue, black)

Teacher:
1. Make a sample set of international alphabet flags from construction paper. Five inches square is a good size. This set also should be laminated or covered with clear contact plastic for protection.
2. An international flag guide is included in the appendix; you also can find a guide in the encyclopedia or can send for a free copy from the source listed under Free Materials in the appendix.

Students:
1. Using the sample flag set as a guide, choose the letters you want to make.
2. Cut out the shapes you need in the correct colors of construction paper.
3. Glue the shapes together to make the flag symbols.
   Option
   1. Use colored markers and paper to write longer messages.

Specific books:
The Craft of Sails and The Cay are appropriate for this activity.
Knot Tying
Level: 4-7

Materials:
- Illustrations of three basic sailor's knots with descriptions (see appendix)
- One piece of rope, three to four feet long, for each student

Teacher:
1. This activity teaches the basic knots used by sailors, the function of each and the importance of each to survival.
2. If a group is working in the knot tying center, it is preferable to make a theromfax transparency of the knot tying illustrations so the chart can be enlarged for easier reference.
3. The students should be able to master the square knot, bowline knot and clove hitch. They also should learn to distinguish between the square knot and granny knot and understand why the granny knot is unsafe.

Specific uses with particular books:
Because knot tying is such an integral part of any sea story, this activity works well in all upper elementary classrooms. It adapts particularly well to The Craft of Sail, Island of the Blue Dolphins and The Cay.

Locate It
Level: 4-7

Materials:
- One sheet of posterboard
- Simplified world map
- Thermofax and overhead projector
- Exacto knife
- Plastic tape in several colors
- 12 white or black 24" shoestrings

Teacher:
1. Make a theromfax transparency of a world map (either the one in the appendix or one you draw yourself).
2. Project the map with the overhead onto the bottom half of the posterboard. Trace with a No. 2 pencil.
3. Trace over the pencil lines with a heavy, permanent, broad-tipped marker. Keep the lines simple with a minimum of detail.
4. Choose 12 places for the students to locate on the map. Make sure they are scattered over the map rather than clustered in one place.
5. Make a list of these places at the top of the posterboard. Cut a hole with an Exacto knife next to the name of each place.
6. Cut slightly larger holes at each actual location on the map. Make sure these holes are big enough for easy manipulation by student.
7. Knot each shoelace. Thread one end through the posterboard next to the name of each place and secure the knot behind the name. Color-code the opposite end of the shoe lace with plastic tape.
8. Match each shoelace to its location by threading the lace through the corresponding hole. Color-code the location on the back of the posterboard with matching plastic tape (e.g., red-tipped lace should go through hole with red tape, etc.).

Students:
1. Match the place names with their locations on the map.
2. Slide each shoelace into its correct hole.
3. Check your work by matching the colors on the back.

Specific use with particular books:
This activity adapts well to nearly any book; you need only include the places named in each. It works particularly well with The Cay and Christopher Columbus because of the number of locations used in each story.

Listening Center
Level: K-7

Materials:
- Cassette tape recorder
- Cassette tapes of sea noises, sea animals and sea chants (see resource references in appendix)

Teacher:
1. Set up the tape recorder in a corner of the room so children can listen individually or in small groups.
2. Listening to the sea sounds may lead to creative writing or artwork; supplies for these extended activities should be available.
3. It is wise to take the precaution of punching out the necessary part of each tape to be sure students do not erase the tapes.

Specific use with particular books:
This activity is designed to be used with any of the eight books described.
Match-Up Card Game
Level: 1-7

Materials:
- 12 to 20 index cards
- Marking pens
- Pictures and descriptions sized to fit cards
- Rubber cement

Teacher:
1. Separate the pictures and descriptions.
2. Glue one picture to a card and the description to another card. Make from six to 10 pairs.
3. Make an identifying color mark on the backs of each pair of cards, using a different color or mark for each pair.
4. This game can be made with sharks, sea vessels, marine occupations, etc.

Students:
1. If playing alone, lay all cards face up on the table. Try to match each picture to its description. Check the backs of the cards to see if you are right.
2. If two people play, take turns. If the player correctly matches a pair, he or she keeps the cards. The person with the most cards at the end of the game wins.

Specific use with particular books:
The Craft of Sail — This activity can be used in several ways with this book. The chart symbols (page 51) are one example, sea way rules (page 61) are another; parts of the ship (pages 24-27), yet another. Many more ideas from this book will suggest themselves.
The Cay — Sea animal pictures and descriptions are one way this activity can be used with this book. Another is to find pictures of the foods available to identify.
Christopher Columbus — Foods of the new world and sailors and their specific occupations are two ways this activity can be used with this book.

Wheat paste (available at hardware stores) or white glue
Newspapers
Small twigs, bits of cloth
Construction paper
Pipe cleaners
Scissors
Shallow container for glue or paste
Pencils

Teacher:
1. Students need to be very familiar with the description of the island or beach they plan to make in miniature. This comes from careful reading of the selected book.
2. Tear the newspapers into strips in advance. Reserve some newspapers to use as protection for table or floor.
3. If using wheat paste, thin according to the manufacturer’s directions. White glue should be thinned half and half with water.

Students:
1. After deciding what type of model will be built, make preliminary sketches on the bottom of the cardboard box or container.
2. Dip strips of newspaper into paste or glue solution and begin to build the island or beach according to the contours described in the book.
3. For finishing touches, sand and sawdust will stick to the damp paper-mache to represent sand and earth. Saran or cellophane crumpled over blue construction paper becomes the sea. Pipe cleaners with green construction paper leaves become palm trees.

Specific use with particular books:
Island of the Blue Dolphins — A model of Karana’s hut can be added along with a duplicate of the whalebone fence.
The Cay — Bits of gravel can spell out a message from the book, or a raft, simple hut or water catchment can be added.
Christopher Columbus — Villages such as those in the book can be created by using small boxes to represent the houses.

Model Island or Beach
Level: 4-7

Materials:
- Corrugated cardboard box or other heavy container
- Saran or cellophane
- Sawdust
- Sand
Net Making
Level: 4-7

Materials:
- Heavy twine or cording
- 6 feet of rope for headline
- Empty paper towel or toilet tissue roll

Teacher:
1. This is one of the more difficult activities. Teachers should practice tying the knots themselves before presenting this center to their students.
2. Illustrations of the clove hitch and fisherman’s netting knot are included in the appendix.
3. Because of the limitations of the twine, this activity will not result in a usable net. By adding more twine and rope and using a netting needle, an actual net can be produced.

Students:
1. Anchor both ends of the rope to a firm surface, leaving the center free and taut.
2. Begin with approximately 25 feet of twine. Tie the twine to the headline (rope) with clove hitch. Loops can be made around the tissue roll to assure even loops. Make six or seven hitches.
3. Begin a second row of knots, moving in the opposite direction.
4. The fisherman’s netting knot, also called the sheet bend, is made in succeeding rows of netting with each loop being pulled tight against the tissue roll to assure even net loops.

Specific use with particular books:
This adapts well to The Eyes of the Amaryllis, Island of the Blue Dolphins, and The Cay as described above.

3. Decorate the ship with tempera paints and markers. Sails can be made from white butcher paper and scraps from the cardboard box.
4. Use the ship for play acting or as a home for the Stuffed Sea Animals you make in another interest center.

Sand Painting
Level: 1-7

Materials:
- Sand in two or more different shades (garden centers, nurseries, cement companies)
- Paper plates or scrap lightweight cardboard (the backs of tablets or shirt cardboards work well)
- White glue (mixed half and half with water)
- Watercolor brushes
- Pencils
- Newspapers

Teacher:
1. Spread newspaper liberally around the area where the students will be working.

Students:
1. Sketch a design on a paper plate or cardboard. Simple designs work best.
2. Brush glue onto one area of the design and cover with one shade of sand. Wait a few minutes, then shake off excess sand.
3. Continue until you have filled in all areas you want to be that shade of sand.
4. Repeat steps two and three with other colors of sand.

Specific books:
Although this activity can be used with nearly any book on the sea, it works particularly well with The Eyes of the Amaryllis, Island of the Blue Dolphins and Seashore Story because they all describe the beaches in detail.
Seashell Computer
Level: 4-7

Materials:
- 15" x 18" posterboard
- Two pieces of posterboard in a second color cut into 9" diameter circles
- Colored markers
- Shell pictures (eight or nine)
- Two brads
- Scissors
- Rubber cement

Teacher:
1. Cut openings near the edge of each posterboard circle, one opening should be a 1" x 2" rectangle, the other should be a 2" x 2" square.
2. Attach each circle to the large posterboard with a brad so that the circles extend from the sides of the "computer."
3. Glue the shell pictures in equal segments on the large posterboard so one is exposed when the 2" x 2" openings is over the picture. Randomly write the names of the shells beneath the other circle so one is visible when the rectangular opening is over the name.
4. Match the shells with their names. As each pair is matched, give each an identifying mark (or color) at the top of the circle. Draw an arrow on the large posterboard pointing to the identifying mark. Repeat the identification until each shell is matched. Each pair will be matched when its color is under the arrow marker.
5. Decorate the posterboard to look like a computer. Laminate each piece separately.

Students:
1. Spin the circle of shells.
2. Turn the circle of names to match the color of the arrow to learn the name of each shell.

Spill—This activity has been used primarily with this book because of the time setting. It does adapt itself to any book of the sea set in the computer age, however.

Seashell Identification
Level: 4-7

Materials:
- 10 or more common shells
- Box or other container to display shells
- Fine line permanent marker
- Dittoed questionnaire list (see appendix)
- Reference books*
- Chart of shell numbers and places each can be found in the reference books

Teacher:
1. Accurately identify all shells in your collection.
2. Write a number on each shell with a fine-line marker.
3. Use the reference books to locate the page where each shell is pictured or described. (Author's note: I made a chart of the shells, the book titles and the page numbers where each shell was pictured. Several shells share characteristics which can be confusing to students.)
4. Arrange the shells attractively in a container. Several small boxes taped or glued into a larger, shallow box and covered with a soft cloth makes a sturdy and attractive display case.
5. It would be helpful to have shells from the particular locations named in each book, but it is not necessary. Students will learn from the reference books that shells differ according to the part of the world in which they are found.

Students:
1. Using reference books, questionnaire list and shells, look up the identification of each numbered shell.

Specific uses with particular books:
This activity adapts to Spill, The Eyes of the Amaryllis, Island of the Blue Dolphins and The Cay.

*Reference books used:
Sea Vessel Match-Up
Level: 4-7

Materials:
- Posterboard
- Small pictures of sea vessels and identifications (see appendix)
- Marking pens
- Hole punch
- Six to eight shoelaces
- Rubber cement
- Plastic tape in various colors

Teacher:
1. Glue the sailing vessel pictures to the posterboard.
2. Punch a hole and tie a shoelace next to each vessel.
3. Write the name of each vessel along the bottom of the posterboard and punch a hole next to each name.
4. Color-code each vessel and its corresponding name by putting plastic tape on one end of the shoelace and on the back of the posterboard behind the correct name.

Students:
1. Match the sea vessel to its name by threading the shoelace from the vessel to the correct name.
2. Check the back of the posterboard to see if you are correct. The colors will match.

Specific uses with particular books:
The Craft of Sail — This activity can be adapted to match the different sails on any one ship or the different kinds of sailing ships.
The Eyes of the Amaryllis — Pictures, drawings, or copies of 19th century sailing ships and small boats can be used with this book.
Island of the Blue Dolphins — Fishing craft, such as that used by the Aleuts who hunt otter in the book, work well with this book.
Christopher Columbus — Pictures, drawn or copied, of 15th century ships, long boats and canoes can be used with this book.

Shark or Sea Creature Game
Level: K-7

Materials:
- Gameboard (available at school supply stores for about $2.00 or you can make your own with posterboard and an Exacto knife)
- Playing pieces (also available at school supply store, about 10 for $1.00 in various colors)
- Posterboard to back gameboard
- Die or spinner

Index cards:
- Marker

Teacher:
1. Personalize the gameboard with pictures or stickers.
2. Depending on the number of blanks on the board, put a “Go back 2 spaces” or “Lose a turn” indicator every eight blanks. Put a “Go ahead 2 spaces” or “Take an extra turn” every five or six spaces.
3. There should be cards with questions/problems for the students to solve before moving on for the remaining blanks.
4. Make up 20 questions/problems on index cards. Questions may be on one side with answers on the reverse (so students can check their answers) or the answers can be on a separate answer sheet.
5. This game is suitable for both primary and upper elementary students. Primary students identify sea creatures pictured on the cards; upper elementary students answer questions about sharks.

Students:
1. Take turns as in any board game. Choose one player to start.
2. Place the question/picture cards face up on the gameboard.
3. Throw the die and move your playing piece ahead the indicated number of spaces. If you land on a blank space, you must answer the question on the top card. If you land on a space with printed instructions, follow those instructions. If you get the question wrong, go back one space.

Specific use with particular books:
This activity is appropriate for any of the books described.
Shell Wheels
Level: 4-7

Materials:
- Posterboard cut into 9" or 10" diameter circle
- Eight small seashells or pictures of shells
- Eight clip-on type clothespins
- Scissors
- Permanent markers
- Fine-line permanent marker
- Ruler

Teacher:
1. Using a ruler or straight-edge, divide the circle into eight pie-shaped parts with the fine-line marker.
2. Glue a shell near the center of each part, leaving the border to clip on the clothespins.
3. Write the name of a shell on a clothespin with a fine-line marker.
4. Clip each clothespin to the posterboard adjacent to its matching shell. Turn the posterboard over (both pins and posterboard should be blank).
5. Using permanent markers, color a dot on the inside edge of each clothespin and match it to a dot on the posterboard. Use a different color for each set.

Students:
1. Match each shell on the wheel with a name printed on a clothespin. Clip the pin to the wheel by its shell.
2. Turn the shell wheel over to check your answers.
   The colored dots should match.

Specific use:
This activity can be used with any of the upper elementary books. The only requirement is that the students must be able to read the names of the shells and discriminate the colors on the back of the board and on each pin.

Ship’s Cross-Section
Level: 4-7

Materials:
- Posterboard
- Picture of ship (x-ray type showing interior)*
- Thermafax machine
- Xerox machine
- Overhead projector
- Plastic tape (optional)
- Scissors
- Markers

Teacher:
1. Xerox the picture to be used and make a thermafax transparency. Use an overhead projector to project the enlarged picture onto posterboard.
2. Copy the projected image with a No. 2 pencil in as much detail as possible. Leave space for a title and for the questions.
3. Retrace the picture with markers and erase all pencil marks.
4. Use strips of plastic tape or contrasting markers to extend a line from the point on the picture to be identified to one inch beyond the edge of the ship. Number each line.
5. Mount the xeroxed picture on a smaller piece of posterboard, number it the same as the large picture and fill in the answers.

Students:
1. Identify the parts of Columbus’ ship.
2. Check your answers with the smaller copy of the picture.

*The picture included in the appendix is from Christopher Columbus by Piero Ventura, New York: Random House, 1978. Encyclopedias or other reference books can provide additional examples, such as an ocean liner or Noah’s Ark. Illustrations from The Craft of Salt and Noah’s Ark also can be used.

Slide Center
Level: K-7

Materials:
- Slide projector
- Color slides of marine life with printed guide
- Posterboard or large sheet of paper for screen
- Masking tape

Teacher:
1. Set up the slide projector on the floor in a corner of the room. Put in the carousel of slides and have the printed guide nearby.
2. Allow the children to focus slides onto paper or posterboard which they can tape to the wall with masking tape. This projects the slides only onto a small area which is best for individual or small group viewing.
3. If the students have never operated a projector before, they may have a tendency to flip through the slides at first to try out the power of the equipment. Generally, this does not last long; they soon settle down to actually enjoy the slides.

Specific use with particular books:
This activity corresponds with all the books described.
Soap Carving*
*Restricted to students in grades four and above and to
groups of four or less at any one time.

Materials:
Ivory soap, one bar for each student
Pocket knives, one for each student

Students:
1. Using clear pictures from reading books, plan and
   carve a sailing vessel from soap.
2. When finished, the ship will float on water. Some of
   the soap will dissolve, however, so you may wish to
   keep the carving for display purposes only.

Specific uses with particular books:
The Craft of Sail — The illustrations in this book lend
themselves to this type of interpretation as students
duplicate the drawings in soap.
The Eyes of the Amaryllis — The figurehead of the
Amaryllis is a natural subject for soap carving.
Reference books showing different kinds and styles
of figureheads may be helpful.
Island of the Blue Dolphins — Although Karana did
not have a carving compound to interpret her
images of the world, it is possible for students to
recreate her need for beauty in this media.

Stained Glass Pictures
Level: K-5

Materials:
7” × 9” clear contact plastic, two pieces per student
7” × 9” construction paper, one per student
Tissue paper in several colors

Teacher:
1. Precut construction paper into a picture border.
2. Cut tissue paper into tiny pieces. Separate colors in
   individual margarine tubs.

Students:
1. Remove backing from one piece of clear contact
   plastic.
2. Place contact plastic, sticky side up, on table.
   Carefully place border on contact.
3. Drop tissue paper pieces in a pattern within the
   border.
4. Remove backing from second sheet of contact and
   place sticky side on picture.
5. Hang the picture from the ceiling or place in a
   window.

Specific uses with particular books:
Island of the Blue Dolphins — Much of the imagery
in O’Dell’s story can be interpreted through this
media, such as the sheen of the cormorant feathers,
the shape of the island and the view of the sea.

Noah’s Ark — Multi-colored fish or the rainbow are
possibilities with this book.

Seashore Story — The pictures in this book will
suggest many ideas, particularly the underwater
and beach scenes.

Stained Glass Rainbow
Level: K-4

Materials:
8½” × 11” ditto paper, one sheet per student
Crayons
Baby oil
Newspapers
Paper towels
Stapler
Scissors
9” × 12” construction paper frame

Teacher:
1. Spread newspapers to protect table surfaces.

Students:
1. Color a rainbow or sea picture on ditto paper. Press
   hard with crayons.
2. Turn picture over on newspaper, squirt about one
   teaspoon of baby oil onto the paper and spread the
   oil with your fingers.
3. Blot the baby oil with paper towels. Don’t rub.
4. Cut a picture frame from construction paper.
5. Staple the picture onto the frame.
6. Mount on a window.

Specific uses with particular books:
Noah’s Ark — This activity, like this book, is quite
good for younger students because it is one they can
manage easily. The rainbow is particularly
appropriate because it is translucent, as a rainbow
is.

Seashore Story — Many of the illustrations in this
book can be duplicated with this activity.

Island of the Blue Dolphins — With older
elementary students, this book generally invites
much artistic interpretation that is suited to this
activity.
Stuffed Sea Animals
Level: K-7

Materials:
- Transparencies of sea animals*
- Overhead projector
- butcher or Kraft paper, cut or torn to about 20" x 30"
- Marking pens or crayons
- Stapler and lots of staples
- Masking tape
- Scissors
- Hole punch
- Yarn
*Thermofax transparencies can be made of the sea animals included in the appendix, or the teacher or students can draw their own.

Students:
1. Choose the animal transparency you want to use.
2. Place the transparency on the overhead projector and tape a large sheet of paper to the wall as your screen.
3. Trace the picture on the paper.
4. Remove the paper from the wall and color the animal.
5. Hold another piece of paper behind the picture and cut out the animal from both sheets. Save the scraps of paper for stuffing.
6. Staple the top half of the animal together.
7. Begin stuffing the animal with the torn and crumpled scraps of paper.
8. Continue stapling and stuffing the animal until it is finished.
9. Punch a hole in the center top of the animal and hang it from the ceiling with yarn.

Specific uses with particular books:
The Eyes of the Amaryllis and Island of the Blue Dolphins can be combined with this activity in the upper elementary grades.
Noah's Ark and Seashore Story provide many examples for animals and marine creatures for the primary students. Younger students often prefer to draw their own animals, otherwise, follow the activity as outlined.

Survival Skills
Level: 4-7

Materials:
- Small box filled with various items which might be found in a person's pockets:
  - Handkerchief
  - Dollar bill
  - Small knife
  - Pencil
  - Rubber band
  - Safety pin
  - Piece of string
  - Key
  - Paper clip
  - Old buckle
  - Book of matches
  - Questionnaire for each student (in appendix)
  - Pencils

Teacher:
1. Allow ample time for the students to study the items in the box. They should be free to touch all the items and to think for a while.

Students:
1. After examining all the items in the box, answer the questions on the printed sheet.

Specific uses with particular books:
Island of the Blue Dolphins — Since Karana would not have access to the materials listed, change the items to include a sharp stick, a flat rock, an oyster or mussel shell, a small bone or a similar item that could be honed into a needle.
The Cay — The items and questionnaire listed are used with this book.

Transparent Film Art
Level: K-7

Materials:
- Ditto paper
- Pencils
- Permanent markers
- Transparencies for overhead projector
- Old shirts (for younger children)

Teacher:
1. Although this activity requires little advance preparation, keep in mind that permanent markers can damage clothing so the children need to be careful. Old shirts make good coverups and generally the children can bring these from home.
2. A source for free transparent film is suggested in the Free Materials section of the appendix.

Students:
1. Draw pictures on ditto paper to recreate scenes from The Cay or to represent other marine ideas.
2. Trace the picture on transparent sheets with permanent markers.
3. Display the picture on the overhead projector and then hang it on the windows in the classroom.

Specific use with particular books:
This activity works well with any of the books described.
Weaving
Level: 4-7

Materials:
Kindergarten weaving looms
(Fabrication instructions in *Art Activities for the Very Young* by P. Louis Hoover or commercial weaving looms can be purchased)
2" x 14" cloth strips in various textures and colors
Blindfolds
Yarn strung on looms as warp

Teacher:
1. This activity is most appropriate with the teaching module based on *The Cay*. Since Phillip was blinded in this story and because he was expected to weave mats for himself and Timothy to sleep on, the students can experience how difficult this task is.
2. The first strip will be fairly easy for the students to weave through the warp, even blindfolded. As they continue, however, the task becomes much more difficult and they will gain insight into how it actually feels to be blind.

Students:
1. Set up the loom and strips of cloth to weave a mat.
2. Have the teacher or another student blindfold you.
3. Weave a small mat as Phillip wove sleeping mats for Timothy and himself in *The Cay*.

Specific uses with particular books:
*Island of the Blue Dolphins* — In Chapter 12, Karana weaves strands of bull kelp to strengthen her fence and reeds to make a basket. If available, gather reed-like grasses for the students to use with this activity.

*The Cay* — This activity was developed particularly for this book. You may want to experiment with reed-like grasses if they are available.

Wood Painting
Level: 4-7

Materials:
Scrap lumber in various sizes
Tempera paints
White glue
Brushes

Teacher:
1. Mix two parts water and one part white glue with dry tempera to help the paint stick to wood and also to give it a slightly glossy finish.

Students:
1. Choose a piece of wood for your painting.
2. Plan your seascape painting.
3. Paint the seascape with the tempera and glue mixture.

Specific uses with particular books:
*The Eyes of the Amaryllis* — The figurehead on the *Amaryllis* provides a good beginning point for experimentation with color on wood grain.

*Noah's Ark* — Students can recreate scenes from the ark.

*Christopher Columbus* — The scenes in this book lend themselves to this medium; the wood tones in the ships will be duplicated in this activity.

*Seashore Story* — Students should be free to interpret this book at will, although it probably will suggest colorful pictures with sprawled lines.
Appendix

Questionnaires
- Discovering Latitude and Longitude .................................................. 24
- Shell Identification .............................................................................. 25
- Survival Skills .................................................................................. 26
- Hurricanes ......................................................................................... 27

Illustrations
- Flag Bingo Card ................................................................................. 28
- Flannelboard Ark ................................................................................ 30
- Hurricane Tracking Chart ................................................................. 31
- International Flag Guide .................................................................... 32
- Net Making Knots ................................................................................ 33
- Sample Knots ..................................................................................... 34
- Sea Vessels .......................................................................................... 36
- Ship's Cross Section ........................................................................... 41
- Stuffed Sea Animal Patterns .............................................................. 42
- World Map .......................................................................................... 45

Free Materials .......................................................................................... 46
- Low Cost Materials .............................................................................. 48
- Bibliography ........................................................................................ 49
Discovering Latitude and Longitude

In *The Cay* Timothy estimates the location of the cay he and Phillip landed on (page 63, Avon paperback, and pages 58-59, Doubleday edition). Can you find it on the map?

What specific reference tools do you need?

Timothy talks to Phillip about the coral banks (page 64, Avon paperback, and page 61, Doubleday edition). Why do they seem so bad?

What is the distance from Curacao to Florida?

What is the distance when traveled by steamer?

How can you tell?

What is located at 30°31' N, 96°30' W?

Why are locations like this more important on sea than on land?

What is the location of a favorite place you like to visit — in latitude and longitude?
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<tr>
<th>SHELL IDENTIFICATION</th>
<th>Name ______________________________</th>
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Survival Skills

Handkerchief  Rubber band  Paper clip
Dollar bill    Safety pin    Old buckle
Small knife   Piece of string  Book of matches
Pencil       Key

1. If you had these items in your pocket when your ship sank, how would you use them for your survival?

2. Which items are the most useful? Why?

3. If you could only have one of these items, which would it be? Why?

4. What items would be of no use to you? Would you throw any away?

5. What would you like to have in your pocket if you had to survive on an island all by yourself?
Hurricanes

Theodore Taylor describes the hurricane in chapters 14 and 15 (pages 101-112) in The Cay.

Using the hurricane reference material, tell if you think Mr. Taylor was accurate in his description of the storm.

Was the wind direction correct? (See map)

How big do you think the eye of the hurricane was?

Why do you think that?

These warning signs indicate different wind forces. Name the signs and tell the wind speed for each.

Color the warning signs if you like, using accurate colors.
Sample Card
INTERNATIONAL FLAGS AND PENNANTS

ALPHABET FLAGS

- **Alfa**: Red over green, keep clear
- **Bravo**: Dangerous cargo
- **Charlie**: Yes
- **Delta**: Keep clear
- **Echo**: Altering course to starboard
- **Foxtrot**: Dispersed
- **Golf**: Want a pilot
- **Hotel**: Not on board
- **India**: Altering course to port
- **Juliett**: On fire, keep clear
- **Kilo**: Desire to communicate
- **Lima**: Stop instantly
- **Mike**: I am stopped
- **November**: No
- **Oscar**: Man overboard
- **Papa**: Abort to sail
- **Québec**: Request health clearance
- **Roméo**: (No message)
- **Sierra**: Engines going stern
- **Tango**: Keep clear of me
- **Uniform**: Standing in danger
- **Victor**: Require assistance
- **Whisky**: Require medical help
- **X-Ray**: Do not carry out your plan
- **Yankee**: Am dropping anchor
- **Zulu**: Require a tug

NUMERICAL PENNANTS

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 0
Net Making Knots

**Clove hitch** is used to attach twine to headline

**Fisherman's netting knot** (the way of tying a sheet bend for netting)
Knot Tying

The square knot, or reef knot, is used in reefing (temporarily reducing the area of a sail), in tying up bundles of all kinds and for many other purposes. It is insecure if the two cords are of different sizes or materials.

The Granny knot, or lubber's knot, is sometimes tied by mistake instead of a square knot. It is unsafe, however, and should always be avoided.
Bowline Knot

- Always able to be untied
- Makes a loop
- Ties boats to piers, lines to anchors, has many uses

Clove Hitch

Used to tie boats to poles
Ship's Cross-Section

1. Columbus' cabin
2. helm
3. compass
4. hatch to get down to hold
5. cannon
6. pump to draw water from the hold
7. winch for handling the sails and anchor
8. hold
9. salted meat
10. biscuits and hardtack

11. sardines and anchovies in saltwater
12. water
13. wine
14. oil
15. flour and wheat
16. garlic and onions
17. sails
18. arms and gunpowder
19. ropes and hawsers

Christopher Columbus, by Piero Ventura
Blue Whale

Sea Gull
Free Materials

Brochures, Printed Materials
Boating Safety Information: Call toll free, 1-800-325-7376 (Missouri residents, call 1-800-392-7780)
Caribbean Tourism Association, 20 E. 46th Street, New York, N.Y. 10017
  Brochure: “The Caribbean: A World of Its Own,” which includes a map and colored photographs.
  Cruise Lines International Association, 17 Battery Place, New York, N.Y. 10004
  Map: Routes of trans-Atlantic passenger ships
  Brochure: “Passenger Ships on the Atlantic Ocean”
  Pamphlet: “Teaching Suggestions for Presenting a Unit on Steamship Travel”
East Carolina University, Marine Advisory Service, P.O. Box 699, Manteo, N.C. 27954
  Brochure: No. POSGAP 9, January 1976, on net mending and patching, written by P.D. Lorimer, fully illustrated to show netmaking skills and the tools used.
Florida Department of Natural Resources, Larson Building, Tallahassee, FL 32304
  Brochure: “The Story of Sea Turtles”
  Insurance Company of North America, 1600 Arch Street, Philadelphia, PA 19101
  Bulletin: No. HH-3776 “International Flag Alphabet Charts,” includes symbols used in alphabet, meanings for individual flags, storm warning flags and other navigation aids and symbols.
Marine Advisory Service, University of Delaware, Newark, Del. 19711
National Geographic Society, P.O. Box 2330, Washington, D.C. 20013
  Catalogue: Educational aids catalogue listing films, filmstrips and educational kits available through the Society.
National Oceanic and Atmospheric Administration, U.S. Department of Commerce, Rockville, MD 20852
  Maps: Hurricane tracking charts, available in quantities
National Wildlife Federation, 1412 16th Street, N.W., Washington, D.C. 20036
  Pamphlet: “Wildlife of Lakes, Streams and Marshes”
  Catalogue: Publications on conservation education
Sea Grant College Program, University of Hawaii, 2540 Maile Way, Spalding Hall 252B, Honolulu, Hawaii 96822
  Workbook: “Makahiki kai,” a 31-page brochure with student exercises such as word searches, how to make an algae press and fish printing.
  No. UNHI-SEAGRANT-MR-77-01.
Sea Grant College Program, Marine Information Service, Texas A&M University, College Station, TX 77843
  Bibliography: Sea Sources, a bibliography of literature and information books written for elementary ages; includes a section of free materials as well as a listing of periodicals for teachers of marine education.
  No. TAMU-SG-79-402.
Brochure: Hurricanes on the Texas Coast, describes Texas’ most notable hurricanes for a 15-year period.
  Probability of hurricane occurrence, guidelines for individual responsibilities and checklists for action before/during/after a hurricane are included. No. TAMU-SG-75-504.
Brochure: Trying to “Marinate Your Curriculum?” includes an order form for all marine education materials currently available.
  No. TAMU-SG-79-406.
Magazine: The University & The Sea, published six times a year with articles on various Texas A&M University Sea Grant projects.
Texas Parks and Wildlife, 4200 Smith School Road, Austin, TX 78744
"Drown proofing"

"Hypothermia and Cold Water Survival," "PFD Types"

Pictures: Wildlife, 8 x 10, in color, with good descriptions

Price list of selected bulletins

U.S. Army Corps of Engineers, P.O. Box 80, Vicksburg, MS 39180

Booklet: "Mississippi River Navigation," illustrated

U.S. Department of the Interior, Geological Survey, 1100 Commerce Street, Room 1-C, Dallas, TX 75242

Pamphlets: "Marine Geology: Research Beneath the Sea," "Our Changing Continent"

U.S. Environmental Protection Agency, Youth, A 107, Washington, D.C. 20460


Supplies

Paper

Newspaper: Newspaper offices often will donate the roll ends of newspaper

Cut paper: Print shops generally have scrap boxes which yield papers in many colors, usually in small pieces

Heavy paper: Business form companies often give away roll ends of heavy paper, such as tagboard or backing material

Transparency film

Used x-ray film generally is discarded by a hospital's radiology department and most hospitals will be happy to give it to schools. It has a slightly bluish cast which enhances its appeal for students doing sea art for overhead projectors.

Cardboard cartons

Local appliance stores: freezer or refrigerator cartons make small arks or ships

Mail order stores: a second source for freezer or refrigerator cartons, also, water heater cartons work well for sailing ships or long boats

Funeral homes: coffin cartons are a good size for combination sailing ships-reading corners

Lumber and sawdust

Most lumber yards have a scrap bin which they are willing for teachers to salvage. This generally yields enough lumber for an average class project.

Sawdust is available from the same source. It's best to take a large grocery bag or small carton to carry the sawdust.
Low Cost Materials

Subscriptions
National Geographic WORLD, P. O. Box 2330, Washington, D.C. 20013
A monthly magazine that is the children's equivalent of National Geographic with excellent color photography and interesting articles.
Subscription rate: $5.00, one year; $15.00, three years

Texas Parks & Wildlife, 4200 Smith School Road, Austin, TX 78744
A monthly magazine published by the Texas Parks & Wildlife department. Each issue includes a "Young Naturalist" feature which is designed for young readers.
Subscription rate: $5.00, one year; $9.00, two years

Scholastic Book Services, 50 West 44th Street, New York, N.Y. 10036
A variety of reading clubs is available through Scholastic and sea literature is frequently included in their regular selections for less than 1.00 per book. A catalogue is available from the address given. A minimum number of books is required for each order, but discounts are usually 25 percent.
*(NOTE: Both of the Millicent Selsam books listed in the bibliography have been available through the Seesaw and Lucky reading clubs.)*

"Sea Chanties" and "The Mystic Sea" Cassette Tape, Sea Grant College Program, Texas A&M University, College Station, TX 77843
One cassette tape with representative sea chanties on one side and recordings of sea animals such as snapping shrimp, dolphins and various fish on the other.
Cost: $2.00
Activity and game books available from grocery, discount and variety stores.
These generally can be found wherever coloring books are sold and are useful in making the fun folders described. Grosset and Dunlap and Whitman Publishing are two publishers of this type of material

Full-color charts, each 30 x 48 inches. Order as follows:
Marine Fishes of the North Pacific.
003-020-00051-7, $2.30.
Marine Fishes of the Gulf and South Atlantic.
003-020-00066-7, $2.30
Mollusks and Crustaceans of the Coastal U.S.
003-020-00087-8, $3.20.
Marine Mammals of the Western Hemisphere.
003-020-00106-8, $3.00.
Cold Water Survival Poster, Hunter Safety News, P.O. Box C-19000, Seattle, WA 98109
This poster gives techniques for staying afloat when in water unexpectedly. It destroys some old myths about flotation and gives advice on retaining body heat.
Cost: $1.00.

Other Materials
Marine Organism Card Game, Sea Grant College Program, Texas A&M University, College Station, TX 77843
A set of 48 marine organism cards is instructional as well as entertaining. The set can be used for two games, "Who's for Dinner?" and "Who Eats Whom?" Printed on heavy card stock, comes complete with a separate instruction sheet. It is an entertaining way to learn how the food chain operates and is suitable for ages 10 and up.
Cost: 50c per set.
Bibliography

Two items for each letter represent this aquatic alphabet. Pronunciation guides are included for
words such as ichthyologist (ik-thee-OL-o-jist).
Accurate, carefully done to invite further
investigation, both pictures and text will interest
older students, but even young children will
appreciate the way Asimov teaches without talking
down to his audience.
Bagnall, Norma. Sea Sources. Texas A&M University
Sea Grant College Program, College Station, TX, 1979.
A bibliography of children's literature and
information books of the sea. A list of sources of free
materials for marine education teachers and a list of
periodicals for marine education teachers.
Condit, Martha Olson, illustrated by Beatrice Darwin.
Something to Make: Something to Think About.
Scholastic, New York, 1975. Available in hard cover
from Four Winds Press.
An information and reference book for teachers and
students. The waterscape (pages 7-11) is an easy
tool to make to watch life underwater. Classroom
use of this tool is limited unless students are taken
on a field trip to the beach, but it is worthwhile if the
students make such a trip with their families. Other
science experiments in the book can be adapted to
the classroom.
Goudie, Alice E., illustrated by Adrienne Adams.
Houses From the Sea. Charles Scribner and Sons,
A combination of literature and information book,
this text gives good descriptions and lovely
drawings of common shells. It would be a good
addition to a browsing table. Ages five and up
Hardin, Jan. Seascapes: Glimpses of our Water
World. Marine Advisory Service. University of
Delaware, Newark, DE, 1978.
A reprint of newspaper articles of information about
varying aspects of the beach for ages 10 and up. It
includes bioluminescence, beach erosion,
barnacles and the tide, with each subject separated
for easy reference.
Hoover, F. Louis. Art Activities for the Very
Young. David Publications, Inc., Worcester, MA,
1961.
This text, written as a reference for teachers of three
to six-year-olds, gives the philosophy of early
childhood art, shows how materials are used and
lists each activity separately so the techniques can
be easily duplicated in the classroom. Weaving
looms are illustrated and instructions for making
them are included (pages 31-33). Many of the
activities can be adapted for marine education and
also for older students.
Kohn, Bernice, illustrated by Arabelle Wheatley. The
New York, 1976. Also available in hard cover from
Viking Press.
This combined literature-information book helps
students discover the joys and treasures found on
beaches and then experiment with things to make
from those finds. The book is written for a variety of
ages (all elementary grades), and explicit directions
are included with detailed drawings. Common
shells and sea weeds also are illustrated.
List, Ilka Katherine. Questions and Answers About
Seashore Life. Woodcuts by the author, drawings by
Arabelle Wheatley. Four Winds Press, New York,
1970.
This is an information book about animals and
plants that live in the oceans. Meant to be
appreciated by readers ages eight and up, it
contains well-written information to appeal to any
age and is accompanied by clear illustrations in
brown and white that are both artistic and scientific.
Morris, Percy A. A Field Guide to Shells of the
Atlantic and Gulf Coasts and the West Indies,
illustrated with photographs. Third Edition edited by
William J. Clench. Houghton Mifflin Co., Boston,
Teachers familiar with the Peterson field guide
series will recognize the thoroughness of
information contained in this guide. It is written for
adults, and much of the information is too complex
*Description Included in Book Synopses section
for most children, yet it is an excellent guide and worth having available for the rare student who wants to investigate a subject thoroughly and scientifically. The photographs are predominantly black and white, with only a few in color. Like all Peterson guides, the name of each item is opposite its photograph and a page reference is included for complete information. Teachers need to familiarize themselves with this book before taking it into the classroom.

This is a reference book for teachers but it includes instructions that will be easily read and understood by students 11 and over. The science experiments included require only simple objects, most of which are found in the home or are easily obtained for classroom use.

This small book introduces the more common mollusks. Written for an adult audience, it is a good guide to classroom identification of shells for ages 10 and over because of the clear, full-color photographs and concise text.

This information book, written for preschoolers through grade three, gives facts about the food chain as it operates in the sea as well as descriptions of several of the animals about which children are most interested. Hamberger’s full-color illustrations are carefully integrated into the text. Indexed, with average sizes of animals listed.

Written for ages 10 and up, this information book tells how an island is formed through volcanic eruption and how it comes to have plant and animal life. Selsam writes factually but with stylistic features that stimulate the imaginations of her readers.

This is a paperback book similar in appearance to a coloring book and is written for ages nine and up. It includes pencil games such as crossword puzzles, mazes and shape identifications. It is used in the Fun Folder activity.

This guide, written for adults, is easily understood by upper elementary students. It contains full-color illustrations and clear, concise text about shells, plants, birds and other features of beaches and oceans. Scientific as well as common names are given. Indexed.

*Description included in Book Synopses section.
Admission to Texas A&M University and any of its sponsored programs is open to qualified individuals regardless of race, color, religion, sex, national origin, or educationally unrelated handicap.

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