



Big Book of Turtles

Created by the NC Aquarium at Fort Fisher Education Section

Essential Question:

How do turtle species differ from each other?

Lesson Overview:

Students will learn about turtle species by each researching a different species and writing a research paper and an encyclopedia page.

Learning Objectives:

By the end of this lesson the class will have created a turtle encyclopedia. Students will be able to:

- Describe turtle adaptations.
- List the parts of a book.

North Carolina Standards:

Kindergarten:

Science:

- **K.L.1** Compare characteristics of animals that make them alike and different from other animals and nonliving things
 - **K.L.1.1** Compare different types of the same animal (i.e. different types of dogs, different types of cats, etc.) to determine individual differences within a particular type of animal.

First Grade:

Art:

- **1.V.2** Apply creative and critical thinking skills to artistic expression.
 - **1.V.2.1** Recognize that artistic problems have multiple solutions.
 - **1.V.2.3** Create art from imaginary sources of inspiration.
- **1.CX.2** Understand the interdisciplinary connections and life applications of the visual arts.
 - **1.CX.2.2** Identify connections between art and concepts from other disciplines, such as math, science, language arts, social studies, and other arts.
 - **1.CX.2.3** Differentiate between sharing ideas and copying.

Science:

- **1.L.1** Understand characteristics of various environments and behaviors of humans that enable plants and animals to survive
 - **1.L.1.1** Recognize that plants and animals need air, water, light (plants only), space, food and shelter and that these may be found in their environment



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- 1.L.1.2 Give examples of how the needs of different plants and animals can be met by their environments in North Carolina or different places throughout the world

Second Grade:

Art:

- 2.V.2 Apply creative and critical thinking skills to artistic expression.
 - 2.V.2.1 Understand that artistic problems have multiple solutions.
 - 2.V.2.3 Create art from real and imaginary sources of inspiration.
- 2.CX.2 Understand the interdisciplinary connections and life applications of the visual arts.
 - 2.CX.2.2 Understand relationships between art and concepts from other disciplines, such as math, science, language arts, social studies, and other arts.

Third Grade:

Art:

- 3.V.2 Apply creative and critical thinking skills to artistic expression.
 - 3.V.2.3 Create art from realistic sources of inspiration.
- 3.CX.2 Understand the interdisciplinary connections and life applications of the visual arts.
 - 3.CX.2.2 Understand how to use information learned in other disciplines, such as math, science, language arts, social studies, and other arts in visual arts.

Information and Technology:

- 3.TT.1 Use technology tools and skills to reinforce classroom concepts and activities
 - 3.TT.1.1 Use a variety of technology tools to gather data and information (e.g., Web-based resources, e-books, online communication tools, etc.).

Fourth Grade:

Art:

- 4.V.2 Apply creative and critical thinking skills to artistic expression.
 - 4.V.2.1 Identify different successful solutions to artistic problems.
 - 4.V.2.2 Use ideas and imagery from North Carolina as sources for creating art.
- 4.CX.2 Understand the interdisciplinary connections and life applications of the visual arts.
 - 4.CX.2.2 Apply skills and concepts learned in other disciplines, such as math, science, language arts, social studies, and other arts, in the visual arts.

Information and Technology:

- 4.SI.1 Apply criteria to determine appropriate information resources for specific topics and purposes.
 - 4.SI.1.1 Use various types of resources to gather information (including print and online media).
 - 4.SI.1.2 Use relevant sources of information for an assigned task.
 - 4.SI.1.3 Use reliable sources of information
- 4.TT.1 Use technology tools and skills to reinforce and extend classroom concepts and activities.



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- 4.TT.1.1 Use a variety of technology tools to gather data and information (e.g., Web-based resources, e-books, online communication tools, etc.)
- 4.RP.1 Apply a research process as part of collaborative research.
 - 4.RP.1.1 Implement a research process by collaborating effectively with other students

Fifth Grade:

Art:

- 5.V.2 Apply creative and critical thinking skills to artistic expression.
 - 5.V.2.2 Use ideas and imagery from the global environment as sources for creating art.
 - 5.V.2.3 Create realistic, imaginative, abstract, and non-objective art.

English (Writing):

- W.5.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
 - W.5.2.a Introduce a topic clearly, provide a general observation and focus, and group related information logically; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.
 - W.5.2.b Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.
 - W.5.2.c Link ideas within and across categories of information using words, phrases, and clauses (e.g., in contrast, especially).
 - W.5.2.d Use precise language and domain-specific vocabulary to inform about or explain the topic.

Information and Technology:

- 5.SI.1 Apply criteria to determine appropriate information resources for specific topics and purposes.
 - 5.SI.1.1 Use various types of resources to gather information (including print and online media).
 - 5.SI.1.2 Use relevant sources of information for an assigned task.
 - 5.SI.1.3 Use reliable sources of information
- 5.TT.1 Use technology tools and skills to reinforce and extend classroom concepts and activities.
 - 5.TT.1.1 Use a variety of technology tools to gather data and information (e.g., Web-based resources, e-books, online communication tools, etc.)
- 5.RP.1 Apply a research process as part of collaborative research.
 - 5.RP.1.1 Implement a research process by collaborating effectively with other students

Time Frame:

Preparation: 20 minutes

Activity: 3-4 weeks



Materials (per student):

- Turtle Research Project pages
- Turtle Encyclopedia page
- Cardstock
- Crayons or markers
- Scissors
- Glue
- Blank paper
- Computers with internet access or nonfiction turtle field guides
- Materials for binding the encyclopedia

Supplemental Background Information for Teachers:

Turtles are ancient reptiles. Fossil records indicate turtles have changed little since their origin 248 million years ago. More than 240 species of turtle can be found all over the world. North Carolina has between 17 and 24 resident species. Hybridization occurs frequently, making identification and exact species counts difficult.

All turtles create nests and lay eggs on land. Nests hatch in 60-90 days. The number of eggs and the length of incubation depend upon the species. Hatchlings are born ready and able to hunt and survive on their own once they emerge.

All turtles have beaks similar to birds. They lack teeth, but use their beaks to tear or break-off bits of food. Sea turtles have extremely powerful muscles and can bite through conch shells without difficulty.

All turtles have shells. Normally a turtle's shell is formed as the ribs and backbone fuse into bony plates. The exceptions are leatherback sea turtles and spiny soft-shell turtles. They lack the typical bony plates of most turtle shells. Instead, a thick leather-like tissue forms their shells. The top shell of a turtle is called a carapace. The bottom shell is called a plastron. Some species have 1-2 hinges on their plastron, some lack hinges. These hinges allow for the turtle to pull its head, legs and tail into the shell and close up tight for protection. Shells are designed to protect the turtle from predators.

Many land turtles, sometimes called tortoises, have high domed carapaces and hinged plastrons so the animal can pull all its vulnerable parts in and close up tight against foxes, raccoons or other predators.

Aquatic turtles have wide flat shells and webbed feet. These adaptations allow aquatic turtles to quickly swim away from their predators. One unique aquatic turtle is the diamondback terrapin. This turtle lives in brackish salt marshes and estuaries.



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Sea turtle shells are much flatter than most turtles. This streamlined shape enables them to swim quickly away from sharks or large fishes. Front and hind flippers made especially for swimming significantly increase their speed in water.

Turtles eat a variety of different foods. Their diet depends heavily on what is found in their habitat. Land turtles eat a variety of worms, fruits, vegetables and mushrooms. Aquatic turtles eat fish and a wide variety of invertebrates such as insects and crayfish. Sea turtles eat fish, sponges, crabs and jellyfish among a long list of other marine plants and animals.

Habitat encroachment and development along nesting beaches of North Carolina are decreasing the numbers of turtles found in North Carolina. Plastics and other forms of pollution kill many marine animals each year. People are altering habitats more quickly than turtles or other animals can adapt. Many of our turtle species are listed as endangered, threatened or of special concern.

Preparation:

Print one turtle encyclopedia page per student front to back on cardstock. Print one copy per student of the other pages on regular paper. Collect materials for binding the encyclopedia such as a three-ring binder or ribbon and cardboard. Assign each student a turtle. We have created a field guide to North American turtles on the Encyclopedia of Life. You can find this field guide here: <http://education.eol.org/fguides/fieldguide-view.php?guidekey=940>. This is not an exhaustive list as there are several subspecies missing. A complete list of North American turtles can be found here:

<http://www.naherpetology.org/namesList.aspx?orderId=7&stateId=0&listType=taxonOrderList>

You can search turtles by state as well: <http://www.naherpetology.org/stateList.aspx>

You may also allow the students to select their own turtle to research.

Procedure:

Stage 1: Beginning a Research Project

1. Review the three types of turtles. We recommend the lesson “[Draw a Turtle](http://seaturtleexploration.com/wp-content/uploads/2014/05/Draw-a-Turtle.pdf)” (<http://seaturtleexploration.com/wp-content/uploads/2014/05/Draw-a-Turtle.pdf>).
2. Have the students list as many types of turtles as they can. Write them on the board.
3. Ask the students to name what types of resources they would use if they wanted to learn more information about those turtles (ex: the internet, encyclopedia, a field guide, etc). What are the pros and cons to each resource?
4. Tell the students that they will be creating a “Big Book of Turtles”. They will each be researching a different turtle so the class can create their own resource about turtles in the United States (or your state if you choose).
5. Pass out the Turtle Research Project Page.
6. Assign each student a turtle (or let them choose their own). Have them write the name of their turtle at the top of the page.



7. Tell the students that they will be using the Turtle Research Project page to keep track of all of the resources they use. Review where to find information such as publication dates.
8. The students should also write down the pages they use to research their turtle.
9. The students will take notes on their notes pages: habitat, diet, adaptations, threats and protections, other fun facts, and new words.
10. Have the students brainstorm what type of information should go on each page.
 - a. Habitat should include where the turtle is found, whether it lives on land or water, and other information about habitat.
 - b. Diet should include the types of food the turtle likes to eat. Is it an herbivore, omnivore, or carnivore?
 - c. Adaptations can include anything that makes the turtle unique. Does it have a thick shell, soft shell, webbed feet, etc? How does it survive in its habitat?
 - d. The threats and protections page can include predators, human interaction, their own protection such as shells, and conservation efforts.
 - e. The fun facts page can include anything interesting not already included on another page.
11. If the student finds any words they do not know, they should write them on their new words note page with a definition.
12. Allow the students to research their turtle online or using nonfiction turtle books such as field guides and encyclopedias.

Stage 2: Organizing Student Research

1. Once the students have collected all of the information on their turtle, it is time to organize their notes.
2. Have the students look at their habitat notes page. Is the information in an order that makes sense? If not, it's time to get organized.
3. Have the students cut their habitat page so that each fact is on its own strip of paper. You will want to model this for them.
4. Once the strips are cut, have the students put the information in order. For habitats, they should start large to small: what state the turtle lives in down to its specific habitat.
5. When the students think they have their strips in order, they should raise their hand to have the teacher double check their work.
6. Once they have been checked off, the student should glue the strips, in their current order, onto another page.
7. Continue with each of the other sheets. This may take several class periods depending on how much time you want to spend.

Stage 3: Drafting a Research Paper

1. For this section, students will begin drafting paragraphs related to their turtle. Students will begin with their habitat notes.



2. Have the students review their notes on habitats.
3. As a class, discuss ways to turn notes into complete sentences.
4. Have the students begin writing their first paragraph using their habitat notes. When they use a statement from their notes, have them cite the resource at the end of the sentence. For example: (Resource 1).
5. As the students start working, they may find that the order that is used does not work well in their paragraph. Explain that good writers are always reorganizing and editing.
6. You may want to model this step for the students.
7. Continue with the other notes pages. This may take several class periods.

Stage 4: Drafting an Introduction

1. Once all of the content paragraphs are complete, the students will need to create an introduction to their paper.
2. Begin by reviewing introduction paragraphs used by nonfiction writers. You can view examples of student writing here:
http://www.corestandards.org/assets/Appendix_C.pdf
3. Ask the students to list what makes it a good introduction. How does the writer hook the reader?
 - a. A good introduction should tell what the report is about, be interesting, use good descriptive words and make you want to continue reading.
4. Hand out the introduction worksheet.
5. Students should create a draft of their introduction.

Stage 5: Drafting a Conclusion

1. The final step of a research paper is a conclusion.
2. Review examples of good conclusions.
3. Ask the students what makes a good conclusion.
 - a. The conclusion should repeat your thesis statement in a new way, summarize your important points, and end with a final description related to the introduction.
4. Pass out the conclusion worksheet.
5. Students should draft their conclusion paragraph.

Stage 6: Peer Editing

1. Next the students should put their paragraphs together.
2. Using their own paper, have the students write their paragraphs in order from introduction to conclusion.
3. The students will then be able to help edit one another's paper.
4. Students should switch papers with another student.
5. Pass out the peer editing worksheet.
6. First, the students should read their classmate's paper one time through.
7. Have them write three compliments for their classmate.



8. Next, the students should read it again and write down three suggestions for improvement.
9. Then, the students should read the paper a third time and circle or underline any spelling, grammar or punctuation errors.
10. The students should get back together and discuss each other's paper in a constructive way.
11. The students should rewrite their paper with their corrections. This can be done on a computer to practice their typing skills.

Stage 7: Create an Encyclopedia Page

1. To summarize the information from their research paper, each student will create an encyclopedia page.
2. Pass out the encyclopedia page.
3. Have the students draw a picture of their turtle in the box.
4. They should use their research paper to answer the other questions.
5. The students should color in the states where their turtle is found. If it is a sea turtle, they should color in the states where the turtle nests or spends time.
6. Once the students have finished their pages, the class should create a book. The class should create a cover page, table of contents, index, and glossary if there are any new words. The students can include their research paper in the encyclopedia as well (optional).
7. Once the class has finished their book, bind it in a three ring binder. An alternative is to punch holes in all of the pages and bind with ribbon.
8. Place in the classroom library.

Extensions:

1. Select turtles from all over the world, not just North America.
2. Make copies of the encyclopedia pages and have each student create their own encyclopedia to take home.
3. Have the students use a second color on their map to show the historic range for their turtle. Have them compare it to the current range and brainstorm why their range may have changed.
4. Use the app HerpMapper to take your students outside and map real turtles you find in the wild: <http://www.herpmapper.org/>.



Turtle Research Project.

My turtle is the: _____

The resources I used to research my turtle:

Resource 1: Nonfiction Book

Title: _____

Author: _____

Date Published: _____

Pages: _____

Resource 2: Nonfiction Book

Title: _____

Author: _____

Date Published: _____

Pages: _____

Resource 3: Website

Web Address: _____

Date you visited the website: _____

Resource 4: Website

Web Address: _____

Date you visited the website: _____



Turtle Habitat Notes

My turtle is the: _____

Notes	Resource

Examples of habitat information include:

- States where the turtle is found.
- Whether the turtle lives on land or in the water.
- Does the turtle go someplace else when the seasons change?
- Is there something special about this turtle's habitat?



Turtle Diet Notes

My turtle is the: _____

Notes	Resource

Examples of diet information include:

- What the turtle eats.
- Does the turtle only eat plants?
- Does the turtle only eat meat?
- Does the turtle eat both?
- Does the turtle eat something different as a baby than as an adult?



Turtle Adaptation Notes

My turtle is the: _____

Notes	Resource

Examples of adaptation information include:

- Anything special about a turtle's shell. For example, is it softer than most shells?
- If the turtle has special colors. This can be for camouflage or to tell male from female.
- Does the turtle have webbed feet, walking feet, or flippers?
- Anything else that helps the turtle survive in its habitat.



Turtle Threats and Protection Notes

My turtle is the: _____

Notes	Resource

Examples of threats and protection information include:

- Predators that eat this turtle. This may include people as well as other animals.
- Problems this turtle is facing such as habitat loss or the pet trade.
- Adaptations the turtle has to protect itself.
- Ways people are protecting this turtle.
- Ways you can help protect this turtle.



Other Fun Facts

My turtle is the: _____

Notes	Resource

Examples of other fun information may include:

- Anything that you thought was interesting but did not fit in another category.
- Ways this turtle is important to people.
- Fun historical stories about this turtle.



New Word Notes

My turtle is the: _____

While researching my turtle I learned some new words.

Word	Definition	Use it in a sentence	Draw a picture of the word



Peer Editing

I am editing _____'s paper on the _____ turtle.

First, read the paper. Next, give the author some compliments.

Three things I liked about this paper were:

1. _____

2. _____

3. _____

Next, read the paper again. Look for some things that can be improved.

Three suggestions I have for this paper are:

1. _____

2. _____

3. _____

Other thoughts: _____



Encyclopedia Page

My turtle is the _____

It looks like this:

My turtle lives in this habitat: _____

My turtle eats: _____

My turtle gets fresh water from: _____

My turtle finds shelter: _____



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My turtle is found in these states:



My turtle is different from other turtles because: _____

My turtle needs help because: _____

I can help my turtle by: _____

