# **Natural Selection and Adaptations Lesson Plan**

This lesson is designed for students in grades 3-5 and includes differentiation options to make the lesson appropriate for your students’ abilities and needs. Students will read about the concept of natural selection and discuss how animals and plants adapt to their surrounds to survive. In addition, students will independently read about four organism’s adaptations and use their inferring skills to determine why those adaptations were necessary for survival.

**Standards:**

**Next Generation Science Standards:**

* **3rd Grade:** 
  + **3-LS3-1** – Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.
  + **3-LS3-2** – Use evidence to support the explanation that traits can be influenced by the environment.
  + **3-LS4-2** – Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.
  + **3-LS4-3** – Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.
  + **3-LS4-4** – Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.
* **4th Grade:** 
  + **4-LS1-1** – Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
* **5th Grade:** 
  + **5-LS1-1** – Support an argument that plants get the materials they need for growth chiefly from air and water.

**Common Core State Standards:**

* **3rd Grade:**
  + **CCSS.ELA-Litearcy.RI.3.2** – Determine the main idea of a text; recount the key details and explain how they support the main idea.
  + **CCSS.ELA-Litearcy.RI.3.3** – Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.
* **4th Grade:** 
  + **CCSS.ELA-Litearcy.RI.4.2** – Determine the main idea of a text and explain how it is supported by key details; summarize the text.
  + **CCSS.ELA-Litearcy.RI.4.3** – Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.
* **5th Grade:** 
  + **CCSS.ELA-Litearcy.RI.5.2** – Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.
  + **CCSS.ELA-Litearcy.RI.5.3** – Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.

**Objectives:**

* Students will be able to apply their knowledge of animal and plant adaptations to infer why each adaptation was successful.
* Students will be able to describe the process of natural selection and provide an example.

**Lesson Duration:** Approximately 35-50 minutes

**Materials:**

* Building Blocks of Animals and Plants books, specifically Plant and Animal Adaptations
* Copies of the Natural Selection Article
* Optional: Natural Selection Detailed Article (higher Lexile level)
* Copies of How Did It Survive?! Assignment
* Optional: How Did It survive?! Modified Assignment

**Requisite Prior Knowledge:**

* Prior to engaging in this lesson, students should be familiar with the vocabulary terms listed below. Students should have knowledge of the general conditions animals and plants need to survive. In addition, they should understand why animals and plants adapt and can review ideas related to this using the Plant and Animal Adaptations book.

**Assessment(s):**

* How Did It Survive?! Assignment
* Optional: How Did It Survive?! Modified Assignment

**Vocabulary:**

* Natural Selection – the process in nature by which organisms with traits better suited for their environment survive, reproduce, and pass those traits to new generations
* Adaptation – any feature that helps a living thing survive in its environment
* Generation – a group of organisms that live during the same period of time
* Organism – any living thing; plants and animals are both organisms

**Differentiation Considerations:**

* Consider using the Natural Selection Detailed Article because it covers the same content at a higher Lexile level.
* For challenge or to engage students’ higher-order thinking skills, consider using the How Did It Survive?! Modified Assignment. This version includes two problems on the normal assignment sheet but extends the task further by requiring students to use their background knowledge and inferring skills to describe scenarios out of which particular animal or plant adaptations may have developed.

**Lesson and Instruction:**

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| **Lesson Components and Time Guidelines** | **Teacher Actions** | **Notes** |
| **Introduction/Hook**  Approximately 3-5 minutes | Ask students the open-ended question “what do you know about chameleons?” and let students share their background knowledge. Direct the conversation to discuss how chameleons adapt to their environments. *This adaptation helps the chameleon survive because it makes it much more difficult for predators to spot.* Discuss the term “adapt” or “adaptation” and create a working definition with your students. We suggest posting this definition in your learning space. |  |
| **Direct Instruction and Modeling**  Approximately 10-15 minutes | Read the Natural Selection article. (Optional: use your preferred method of notetaking with students to capture the main ideas of the article.) Discuss the major ideas and biggest take aways from the article:   * Natural selection is “a process by which certain traits in organisms become more common over generations and time” (Plant and Animal Adaptations, p. 39) * Darwin’s theory predicted which members of a species would die prematurely based on whether they adapted to their changing environment * Some traits are more desirable for survival than others * Why do some people suggest we should refer to survival of the fittest as “reproduction of the fittest” instead? * Sometimes organisms adapt so much they develop enough new structures that they become a new species entirely!   Draw students’ attention back to the giraffe example in the text, reviewing what happened to the giraffes with shorter necks over many generations. Discuss what the adaptation was and how it helped the giraffes with longer necks survive. *Why do we not see as many short-necked giraffes in future generations?*  Explain and/or model how to complete the How Did It Survive?! assignment. (The first scenario mirrors the giraffe example above. Consider handing out the assignment and modeling with the giraffe example if it would benefit your students.) Explain that students will consider four organisms, how they have adapted, and why their adaptations were necessary for survival. Students will use their inferring skills to help them complete this assignment.  Optional Challenge: Use the How Did It Survive?! Modified assignment which includes some problems from the normal assignment, but also includes two problems where students extend their thinking to describe scenarios that best match particular adaptations. Here, students still need to explain why they believe the adaptation benefitted the organism. This version requires higher levels of cognitive demand and application. |  |
| **Independent Application and Demonstration of Learning**  Approximately 15-20 minutes, but adjust for your students’ needs | Provide time for students to complete the assignment. As students work, monitor their thinking.  Encourage students to use evidence and reasoning to describe why each adaptation would be beneficial to that organism’s survival.  Students can refer to their article as well as the Plant and Animal Adaptations book for support as needed. |  |
| **Closure**  Approximately 7-10 minutes | Provide time to review each of the four organisms, situations, adaptations, and students’ reasoning. Focus on the inferences students made during this sharing time.  Review the objectives and make a connection back to the natural selection article. *Today you thought about four organisms, two plants and two animals, and how they adapted to survive their changing environments. Organisms need to adapt in order to survive. Those who do not, become victims to natural selection.* |  |

**Next Steps and Reflection:**

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| What went well? |  |
| What changes might be beneficial? |  |
| Reteaching needs |  |
| Extension needs |  |