

Grade 5

Title: Temperature and Alligators

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Student Learning Objective(s):

The students will learn about types of water and how these different types affect the species that live within them, more importantly, how they affect alligators.

LA GLE's

Grade: 5 # 4: Design, predict outcomes, and conduct experiments to answer guiding questions.

Grade: 5 # 22: Use evidence and observations to explain and communicate the results of investigations.
(SI-M-A7)

Materials needed:

- 2 bowls
- Feathers
- Cold water
- Hot water
- Food coloring
- Freezer
- Cups
- Ice
- Poster boards

Detailed Procedure. Describe what the students will do in each stage. Include guiding questions you might ask to help students.

1. Engage:

Science Process Skills Indicate which science process skills students will develop in this part of the lesson.

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|--|--|---|---|-------------------------------------|-------------------------------------|------------------------------------|
| <input type="checkbox"/> Observation | <input type="checkbox"/> Classification | <input type="checkbox"/> Communication | <input type="checkbox"/> Measurement | <input type="checkbox"/> Estimation | <input type="checkbox"/> Prediction | <input type="checkbox"/> Inference |
| <input type="checkbox"/> Identifying Variables | <input type="checkbox"/> Controlling Variables | <input type="checkbox"/> Defining Operationally | <input type="checkbox"/> Forming Hypotheses | | | |
| <input type="checkbox"/> Experimenting | <input type="checkbox"/> Graphing | <input type="checkbox"/> Modeling | | | | |

- temperature

1. The teacher will provide each group with a clear container full of cold water that is colored yellow.
2. The teacher will provide each group with a cup that has very hot water that is colored green.
3. The teacher will have the students pour the hot water into the cold water and look at what happens.
4. The teacher will have the student draw what they see and jot down what happened.
5. Come together, whole class, and discuss how this might relate to the environment. **Does water end up like this?**
6. **What might this mean for everything that lives in the water?** Go into detail, not only about temperature, but also about depth of the water.

2. Explore/Explain:

Science Process Skills Indicate which science process skills students will develop in this part of the lesson.

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|--|--|---|---|-------------------------------------|-------------------------------------|------------------------------------|
| <input type="checkbox"/> Observation | <input type="checkbox"/> Classification | <input type="checkbox"/> Communication | <input type="checkbox"/> Measurement | <input type="checkbox"/> Estimation | <input type="checkbox"/> Prediction | <input type="checkbox"/> Inference |
| <input type="checkbox"/> Identifying Variables | <input type="checkbox"/> Controlling Variables | <input type="checkbox"/> Defining Operationally | <input type="checkbox"/> Forming Hypotheses | | | |
| <input type="checkbox"/> Experimenting | <input type="checkbox"/> Graphing | <input type="checkbox"/> Modeling | | | | |

1. Discuss warm blooded and cold blooded animals. Talk about their similarities and differences. Define them using the terms endotherm and ectotherm.
2. **“If an endotherm needs to eat so much food, what would the advantage of being an endotherm be?”** [It can live in more places and remain active in a wide range of temperatures.] **“An ectotherm’s level of activity depends on the temperature of the environment. When would an ectotherm be most active?”** [When it is warm and not too

hot or too cold.] SCoPE Site Lesson Plan

3. The teacher and students will discuss whether an alligator would be a warm blooded or cold blooded animal. The teacher will ask the groups to work together to come up with a hypothesis and justify their answer. The teacher will have the students write their hypothesis on the poster given.
4. The teacher will explain that they are going to figure out how animals regulate their body temperature. "Lets test our hypothesis!"
5. Fill two glasses with equal amounts of room temperature water. Label one glass A and the other glass B.
 6. Place a thermometer in glass A to determine the initial temperature of the water and record it in the chart.
 7. Set glass B aside.
 8. Place glass A in a bowl, then fill around the glass with cold water and ice cubes to two to three cm below the rim of the glass. Be careful not to spill the water into the glass.
 9. Put the thermometer in glass A for one minute. Record the temperature in the chart.
 10. Next put the thermometer in glass B that you set aside which is at room temperature. Record the initial temperature. Before you put it in the freezer (small ice chest), form a hypothesis: Which glass of water will lose the most heat in one minute?
 11. Record the temperature of the water in glass B in the chart.
 12. **What did we notice happen?**
 13. The teacher will show the students that the cup surrounded by ice and water was colder than the cup that was placed in the freezer. You can relate this to the difference between trying to cool off in the shade, the freezer, or cool off in the water.
 14. **How do you think this might affect other living things?**
 15. **What might the alligators and other living animals do about this?**
 16. The teacher will have the students analyze their results and draw their conclusions. Have the students write their ideas on the poster under the hypothesis.
 17. Take another cup and fill it with room temperature water. Put the cup in a bowl and fill around the baggie with cold water and ice. Place a thermometer in the glass of water and record the temperature after one, two, and five minutes. Repeat the demonstration using feathers (preferably down feathers). Explain that feathers and hair work best as insulators when they are able to trap the most air. Wet hair and feathers do not work well.
 18. **What do you notice now?**
 19. The teacher should ask questions that get the students thinking about how this might relate to animals and how they cool off. From this, they relate this information to cold blooded and warm blooded animals.
 20. **How might you relate this to living things?**
 21. **What might this tell you about alligators and their bodies?**
 22. The teacher will have the students analyze their results and draw their conclusions. Have the students write their ideas on the poster under the hypothesis.
 23. The teacher will have the groups relate this to their hypothesis and decide whether or not their hypothesis was right, partially right, or wrong.
 24. The students will communicate/report their results to the class.

3. **Expand:**

Science Process Skills *Indicate which science process skills students will develop in this part of the lesson.*

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|--|--|---|---|-------------------------------------|-------------------------------------|---|
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| <input type="checkbox"/> Experimenting | <input type="checkbox"/> Graphing | <input type="checkbox"/> Modeling | | | | |

- Wetlands and alligators:
 1. The teacher and students will talk about the ways that alligators adapt to temperatures.
 2. The teacher and students will talk about what they do during different seasons. (discuss the different wetlands) The teacher will bring in pictures of alligators in many different environments such as in water, laying outside the water, and in holes under the ground.
 3. What do you think that they do about their eggs?
 4. The teacher and students will look at pictures and discuss how they know if the egg will be a male or female based on temperature

4. Evaluate:

What exactly will you do, or what evidence/data will you collect, to ascertain whether the students can achieve the objectives you listed at the top of this lesson?

1. The teacher will walk around as the children are working on the temperature and ask the students what they are noticing. She will also evaluate the chart and explanation that they work on.
2. The teacher will assess the groups as they are thinking about hypothesis. Are they relating the activities that they are about to do to animals and how temperature affects them.
3. The teacher will assess the posters that each of the groups are working on, which will include the results from the two cup experiments. Were the students able to follow the directions and perform the tasks correctly? Did the students demonstrate understanding of the results from the activities.
4. The teacher will assess how the students are able to relate this information to alligators through pictures and the discussion of temperature as it relates to the wetlands and alligators. Were the students able to take the information found from the activities and relate this to temperature in animals and, more specifically, to alligators.

Brain Compatible Learning Strategies Used in This Lesson:

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|--|---|--|--|--|
| <input type="checkbox"/> Brainstorming/Discussion | <input type="checkbox"/> Drawing and Artwork | <input type="checkbox"/> Field Trips | <input type="checkbox"/> Games | <input type="checkbox"/> Graphic Organizers |
| <input type="checkbox"/> Humor | <input type="checkbox"/> Manipulatives, Experiments, Labs, Models | <input type="checkbox"/> Metaphors, Analogies, and Similes | <input type="checkbox"/> Music, Rhythm, Rhyme, and Rap | <input type="checkbox"/> Project/Problem-Based Instruction |
| <input type="checkbox"/> Mnemonic Devices | <input type="checkbox"/> Movement | <input type="checkbox"/> Role Plays, Drama, Pantomimes | <input type="checkbox"/> Storytelling | |
| <input type="checkbox"/> Reciprocal Teaching, Cooperative Learning | <input type="checkbox"/> Visualization/Guided Imagery | <input type="checkbox"/> Visuals | <input type="checkbox"/> Writing/Journals | |
| <input type="checkbox"/> Technology (student use) | | | | |

Lesson Source:

Scope (2004). Middle School Science: Cell Theory and Biological Organization. Retrieved April 15, 2009 from http://search.yahoo.com/search?ei=UTF-8&type=oovoooyach&p=scope+site+lesson+plan+10+warm+blooded%2Fcold+blooded+animals&SpellState=n-237952192_q-rLNQOzyq0tVAlpG38i.b%2FAAAA%40%40&fr2=sp-top