

Science - Observing Guppies

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BACKGROUND INFORMATION

Subject(s) Science

Topic or Unit of Study Observing Guppies

Grade/Level Grade 1

STANDARDS & ASSESSMENT

Standards

NJ- New Jersey Core Curriculum Content Standards

Subject: Science (2009)

Standard: 5.3 Life Science: Life science principles are powerful conceptual tools for making sense of the complexity, diversity, and interconnectedness of life on Earth. Order in natural systems arises in accordance with rules that govern the physical world, and the order of natural systems can be modeled and predicted through the use of mathematics.

Range/Grade Level: By the end of grade 2

Strand: C. Interdependence: All animals and most plants depend on both other organisms and their environment to meet their basic needs.

Cumulative Progress Indicator: 5.3.2.C.1 Describe the ways in which organisms interact with each other and their habitats in order to meet basic needs.

Strand: D. Heredity and Reproduction: Organisms reproduce, develop, and have predictable life cycles. Organisms contain genetic information that influences their traits, and they pass this on to their offspring during reproduction.

Cumulative Progress Indicator: 5.3.2.D.1 Record the observable characteristics of plants and animals to determine the similarities and differences between parents and their offspring.

Cumulative Progress Indicator: 5.3.2.D.2 Determine the characteristic changes that occur during the life cycle of plants and animals by examining a variety of species, and distinguish between growth and development.

Assessment Plan

Pre-Assessment: The teacher will pre-assess the students' knowledge about guppies/fish at the beginning of the lesson. The **K** section of the KWL chart will be utilized to determine what students already know.

Formative Assessment: Throughout the lesson, the teacher will observe student responses to questions during the engage section, the explain section, the elaborate section, and the evaluate section of the lesson. The teacher will perform numerous whole group formative assessments, including the KWL chart and the Venn Diagram. These simple assessments will allow the teacher to determine whether or not the students as a whole learned the information that they were expected to comprehend during the lesson. In terms of independent formative assessment, the teacher will collect Record Sheet 7-A from each student upon completion of the lesson in order to determine individual student learning. These observation sheets will be graded using a 3-2-1 rubric. The rubric will allow the teacher to gauge which students successfully completed the task at hand (3), which students needed improvement/assistance (2), and which students were unable to complete the task (1).

Assessment/Rubrics

Attachments:

1. **Observing Freshwater Animals Rubric.docx**

IMPLEMENTATION

Goal(s) Students will be able to determine between female and male guppies based upon observation, as well as understand how different organisms interact within a single environment or ecosystem.

Objective Students will be able to observe, draw and describe male and female guppies, identify the similarities and differences between guppies and snails, and discuss how numerous organisms interact within a single ecosystem with 75% of the students receiving a 3 on the *Observing Freshwater Animals Rubric*.

Purpose Students will be able to observe freshwater animals, including snails and guppies, as well as the environment in which they live.

Procedure **Engage:** The teacher will begin the lesson by stating the objectives: I can observe and draw guppies. I can compare and contrast guppies and snails. The teacher will then invite the students to join her at the back carpet. She will introduce the KWL chart titled *Guppies*. The teacher will have the students think, pair, share in order to come up with anything they may know about fish or guppies. The students will first think to themselves, share with a partner, and then finally share their thoughts with the whole class. The teacher will write down what the students say in the **K** section of the KWL chart, which will contain all the information they already know about fish/guppies. The teacher will then say, *We are actually going to be able to observe guppies today, so we will be able to learn a lot more about these tiny fish. What information would you like to learn from this lesson?* The teacher will have students ask questions about guppies that they would like to possibly find the answers to during the lesson. The teacher will record these questions in the **W** section of the KWL chart. The teacher will explain that the students will be observing a boy guppy and a girl guppy. She will review the observation chart in order to assist students in their descriptions of the guppies. This chart displays the four senses - sight, sound, smell, and touch. The teacher will tell the students that there will be absolutely NO touching the fish! They can tell the texture of the fish just from looking at it. The teacher will also remind the students that they do not use their sense of taste during science lessons because it is not safe.

Explore: Once the students are made aware of the rules and understand the directions, The teacher will demonstrate observing a guppy under the document camera. She will use her sense of sight, smell, and sound to draw a picture with labels and describe the guppy. This will give the students a better idea of what they will be doing and provide them with a reference throughout the explore section of the lesson. After modeling the task at hand, the teacher will provide each table with a male and a female guppy. The students will be given about 10 minutes to observe the guppies, draw pictures on the record sheet, and describe the guppies using the area provided on their sheet.

Explain: After the students complete their observations, drawings, and descriptions, the teacher will invite the students to sit at the back carpet once again. The teacher will introduce a book titled *All About Guppies* that she wrote. This book introduces the important information that the students need to know about guppies, and fish in general. The teacher will ask the following questions throughout the duration of the book?:

- What do you think a vertebrate is? Why?
- How can we tell the difference between a boy guppy and a girl guppy?
- What parts of the guppy's body does it use to move?
- How does a guppy breathe underwater?

Elaborate: Following the book, the students will go to the carpet in order to share their guppy observations. The teacher will display a piece of large chart paper that has a circle drawn in it. The circle represents half of a Venn diagram and is titled *Guppies*. To get the students started, the teacher will ask the following questions:

- What are some words that describe guppies?
- What are the guppies' bodies like?
- What did the guppies do while you were observing them?

The teacher will record their observations within the circle. She will then take out the other half of the Venn diagram that was made the previous day, which is titled *Snails*. She will combine the circles in order to create one large Venn diagram that will be used to compare and contrast the pond snails and guppies that the students observed. The students have essentially already contrasted them, but the teacher will go through and see if anything else can be added. The teacher will then ask students to compare the two animals. The teacher will write in the center circle any similarities between the snails and guppies that the students say.

Evaluate: As a class exit ticket, the teacher will return to the KWL chart that was introduced at the beginning of the lesson. The teacher will ask the students to turn and talk to their partners about what they learned as they observed the guppies and also what they learned during the *All About Guppies* book. The teacher will then ask students to share what they learned with the whole class. She will write these findings in the **L** section of the KWL chart.

**Special Needs Component
[modification(s)]**

Student 4, Student 5, Student 15, and Student 18: These students will be placed at the back table with the teacher in order to receive assistance during the explore section of the lesson. The materials will not be differentiated for this particular lesson, since these students are capable of completing the worksheet with teacher assistance. They do not have to utilize the second page (Record Sheet 7-A Page 2) if they do not want to. They are expected to draw a detailed picture and make an attempt to describe the two guppies.

Student 2, Student 14, Student 16, and Student 17: These students are advanced and will therefore be expected to complete the second page (Record Sheet 7-A Page 2) of the observation sheet. If these students are done early, they can either help other students that may be having a difficult time or they can retrieve a blank writing booklet and begin writing a short story about guppies.

Sample Student Products

Model(s) of Instruction

Inquiry-Based Model

Time Allotment

1 class periods. 40 Mins. per class.

**Author's
Reflection(s)/Critical
Analysis**

MATERIALS AND RESOURCES

Instructional Materials

Attachments:

1. **All About Guppies.docx**
2. **Record Sheet 7-A (Page 1).pdf**
3. **Record Sheet 7-A (Page 2).pdf**

Resources

- Materials and resources:
 - Guppies
 - Snails
 - Plastic tank with water, rocks, and plants
 - Record Sheet 7-A page 1
 - Record Sheet 7-A page 2
 - Pencils
 - Large Chart Paper
 - Expo Markers