

EGG-STRORDINARY LIFE CYCLE

Objective:

Students will describe and illustrate the life cycle of an amphibian.

Materials: trade books cited in the activities, aquarium or small wading pool, tadpoles, white copy paper, drawing implements, tape, thick writing paper, felt-tip markers

Set Induction

Personal Connection: How many of you have a pet at home? What is the life cycle of your pet? As you converse, diagram the pets' life cycles using a circular flow chart.

Transition: Because amphibians are living creatures, they have life cycles, also. What do you think their life cycles might be? Give students time to diagram amphibian life cycles using circular flow charts. Read *Chickens Aren't the Only Ones* by Ruth Heller. Talk about how although many animals begin life as eggs, their life cycles may vary from that point on. Read *An Extraordinary Egg* by Leo Lionni. Discuss why the frogs mistook the egg as a chicken egg.

Activity One: Tadpole Tale

- Read *Tale of a Tadpole* by Barbara Ann Porte. Discuss the life stages of tadpoles.
- Watch tadpoles evolve into adult amphibians! Carefully scoop some tadpoles from a local pond or bog. Put them into a class aquarium or wading pool and watch them grow. Each day, check the tadpoles' progress. Create a lifeline of the stages of development by drawing daily pictures. Post the lifeline as a horizontal or vertical sequential strip in the classroom. Once the amphibians reach the adult stage, release them into the wild.
- Check students' understanding by having each person diagram the life cycle of amphibians with a circular flow chart.

Extension Activity: HOP-pily Ever After

Students can create origami frogs! For step-by-step directions, access Tina Watkin's website at [9/28http://employees.oxy.edu/jquinn/Math105/society/origamifrogs.html/99](http://employees.oxy.edu/jquinn/Math105/society/origamifrogs.html/99). Students can create paper frogs that actually hop by following the instructions in *The Usborne Book of Origami*, pages 14-15, published by Scholastic, Inc.

AMAZING AMPHIBIANS AND RADICAL REPTILES

Objectives:

1. Students will compare and contrast the characteristics of reptiles and amphibians.
2. Students will state three facts about reptiles or amphibians.

Materials: trade books cited in activity sections, informational books about reptiles and amphibians, encyclopedias, computer with Internet access, envelopes, stamps, chart paper, poster board, miscellaneous art supplies, modeling clay

Set Induction

Personal Connection: As you've discovered from watching tadpoles evolve into adults, amphibians are pretty amazing animals! So are reptiles. What do you think you already know about reptiles and amphibians?

- a. Divide into heterogeneous research teams. Each team will be investigating EITHER amphibians OR reptiles. Give each team one piece of chart paper to create a K-W-L chart. In the "K" column, students list what they think they already know about amphibians or reptiles.
- b. Create one K-W-L class chart for amphibians and a separate chart for reptiles. Record students' efforts as they share their "K" columns with the class. Team recorders may add to their "K" lists, also.

Transition: Let's find out more fun-tastic facts about these amazing creatures. What else do you think you want to learn about amphibians and reptiles?

- a. In the "W" section of the K-W-L charts, each team writes questions about what they want to learn about amphibians or reptiles.
- b. Record students' questions as teams share their "W" columns with the class. As classmates share, recorders may add to their "W" lists.
- c. To ensure students gain a complete understanding of amphibians and reptiles, please include questions about these topics: different kinds of reptiles/amphibians; physical characteristics; life cycles (are they hatched or born alive?); cold-blooded; and environmental conditions.

Activity One: Q & A About R & A

- a. Teams work cooperatively to gather information about reptiles or amphibians. They may glean information from informational trade books, encyclopedias, or the Internet. Students can also write letters to local zoos, the Reptile Gardens in South Dakota, and herpetologists.
- b. Teams record what they have learned in the "L" column of their K-W-L charts. As they work, they should also cross out inaccurate facts in the "K" column and write new questions in the "W" column.
- c. Once students have finished gathering information, they create a collaborative cluster, or concept map, depicting the facts they have discovered.

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- d. Then, each team member chooses one interesting reptile or amphibian to research in more depth. Students create individual reports describing how their animals look, where they live, what they eat, and what makes them radical reptiles or amazing amphibians. Reports may be in chart or paragraph form.
- e. Each student also creates a visual representation of their special animal such as a postage stamp, poster, diagram, clay model, or diorama.
- f. Teams present their information to classmates. Each team will have a large concept map depicting what they've learned. Each team member will have a mini-report and visual representation to share.
- g. After the presentations, hold a class discussion. Using a Venn diagram (two overlapping circles) discuss reptiles' and amphibians' similarities and differences. Then record what students have learned in the "L" columns on the amphibian and reptile K-W-L charts.

Extension Activity: Fun-tastic Facts

Each day of this mini-unit, share one fun-tastic fact about reptiles and amphibians. As students conduct research, they can create fun facts to share, also. Here are a few facts to get you started:

- Snakes do not have moveable eyelids or external ears.
- Some crocodiles let birds pick particles and bugs from their teeth!
- The reticulated python is the world's largest snake. It can grow up to 30 feet long.
- The Black Mamba snake can move at 7 miles per hour for 47 yards.
- At 18 feet long, the King Cobra is the largest poisonous snake.
- Gaboon Vipers can have two inch long fangs.
- One giant tortoise lived to be over 200 years old!
- An African Ball Python lived to be 44 years old.
- Snakes have 4 rows of upper teeth and two rows of bottom teeth.
- Frogs can lay up to 30,000 eggs at a time!
- Some amphibians carry their babies on their back.
- Reptiles have been on earth for about 200 million years.
- Some lizards can grow replacement tails if their tails get broken off.

Extension Activity: Sploosh!

Pairs of students play *Sploosh* to test their knowledge of reptiles and amphibians. Divide students into pairs. Each pair needs one gameboard, one set of cards, one die, one answer key, and two playing pieces. Directions for playing are on the gameboard.

TOAD-ALLY TERRIFIC TALES

Objectives:

1. Students will list 3 things amphibians need in order to survive.
2. Students will describe how amphibians' environments affect their survival rate.
3. Students will create posters and write editorials delineating proposed solutions to environmental issues.

Materials: Computers with Internet access, paper, pencils, address of local newspaper, envelopes, stamps

Set Induction

Personal Connection (Quickwrite) Students write about some time something disappeared or about a mysterious life event. After giving students a few moments to write, ask volunteers to share their real-life mysteries. How many of you watch mystery movies or read mystery books? Give students a chance to discuss their favorite mysteries. What makes a mystery a mystery? What do good detectives have to do to solve the mystery?

Transition: There is a real-life mystery that is occurring all over the world! Frogs and toads are disappearing! Where do you think they might be? Today you're going to be detectives to solve this mystery.

Activity One: Toad-ally Awesome Mysteries

Get ready to be techno-detectives! All of the clues you will need to solve the case of the disappearing frogs are on the Internet.

- a. Form teams of 2-3 detectives.
- b. Each group needs to access one of these websites:
"The Case of the Disappearing Frogs" is located at <http://www.aquarium.org/education/spotlight/disappearingfrogs/index.htm>
"Croak" is located at <http://www.accessexcellence.org/croak/>
- c. Read through the mystery and explore all of the hotlinks to collect clues to solve the mystery.
- d. Keep a detective log of the clues and possible solutions.
- e. Have a grand conversation about the mysteries, clues, and solutions once everyone has solved the mysteries. How has the environment impacted frogs' survival rate?

Activity Two: Save the Frogs!

What can you do to help save the frogs? Brainstorm a list of ways children can protect amphibians' environment (i.e. not use pesticides, throw away trash, etc.). Several ideas are proposed on the mystery websites, also.

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- a. Students create posters to encourage other children in the school to protect amphibians' environment. Post these in public areas around the school.
- b. With your principal's permission, have students compose editorials reflecting their understanding of the environmental issues and proposed solutions. Teach students how to address envelopes. Submit the editorials for publication in the local newspaper.

Extension Activity: Lost!

Pretend you are lost in the forest. How would you survive? Draw a picture of yourself in the forest (encourage students to include details). Write a short story describing how you would use things found in your environment to help you survive. Students share stories with the class.

Extension Activity: Frog Fables

Frog fables are short stories in which talking amphibians teach people lessons. Multiple frog fables can be found at: <http://allaboutfrogs.org/info/teach/learning.html>. Beware! Not all of these fables have hoppy endings! Some modern-day stories that teach moral lessons include *Yertle the Turtle* by Dr. Seuss, *Verdi* by Janell Cannon, and *It's Mine* by Leo Lionni. You can read and discuss the fables as a whole-class activity or teams of students can read different fables. Then, teams can share the fables through story telling, Readers Theatre, or puppet shows. They might enjoy creating "Fable TV" by cutting a TV window out of a large cardboard box, inserting two parallel dowel rods, and moving a continuous roll of pictures about the fable across the screen as they narrate the story.

THE SWAMP IS ALIVE.... WITH THE SOUND OF MUSIC!

Objectives:

1. Students will duplicate frog-songs and croc-talk.
2. Students will list three reasons why frogs and crocodiles communicate.
3. Students will create and perform a reptile rap.

Materials: Computer with Internet access and speakers

Set Induction

Personal Connection (Quicktalk): Who is your favorite musician? What is extra special about that person's music? Describe the musician's style of singing and/or playing an instrument. Choose one of the artist's most popular songs. What do you think the musician is communicating through the song?

Transition: Reptiles and amphibians also sing to communicate with one another in the wild. Most of their singing happens at night because it's so dark they can't see each other. So they sing to find their friends. What other animals sing to find their friends? (*birds, crickets, locusts, etc.*)

Activity One: Frog-Songs

Many human musicians use drums, or tympani, to communicate musical messages. Frogs also have ear-drums, or tympanum, on the sides of their heads. These ears are connected to their lungs so that when frogs hear noises, their eardrums and their lungs both vibrate. This double vibration equalizes the frogs' internal pressure so that their noisy singing doesn't hurt their eardrums. The size and distance between the frogs' ears varies according to the wavelength and frequency of the male frogs' call. Some frogs sing loud enough to be heard a mile away! What do their songs sound like? Access this website: http://animaldiversity.ummzx.umich.edu/chordata/lissamphibia/frog_calls.html
When frogs sing, what do you think they might be trying to communicate?

Activity Two: Croc-Talk

Crocodiles also communicate with croc-talk. Learn how to speak croc-talk by accessing this website: <http://www.flmnh.ufl.edu/natsci/herpetology/brittoncroc/crococomm.html>
What do you think the crocodiles are saying to their friends?

Activity Three: Rep Rap

Now you're going to have an opportunity to communicate what you know about reptiles and amphibians to your friends. What type of music uses a lot of spoken words along with instruments and a little singing? (*rap*) Today you're going to work in a small group to create a Rep Rap.

- a. Form groups of 2-3 children.
- b. Groups brainstorm reptile and amphibian facts to include in their rap.

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- c. Some students will do the rep-rap talk while others provide the background music and sounds. They might want to include croc-talk and frog-songs in the background!
- d. Give children time to create and practice their raps.
- e. Children perform raps for their classmates.

Extension Activity: R & A Songs

Individual or groups of students choose a nursery song such as “Mary Had a Little Lamb”. Using that melody and/or text structure, students create another song about reptiles and amphibians to perform for their peers.