Lesson: Tadpoles to Frogs!  Length: 6-12 weeks

Age or Grade Intended: 3rd Grade

Academic Standards:
Science
3.1.3. Keep and report records of investigations and observations* using tools, such as journals, charts, graphs, and computers.
3.1.5. Demonstrate the ability to work cooperatively while respecting the ideas of others and communicating one’s own conclusions about findings.
3.2.6. Make sketches and write descriptions to aid in explaining procedures or ideas.
3.4.3. Observe that and describe how offspring are very much, but not exactly, like their parents and like one another.

Performance Objectives:
1. The students, when observing the tadpoles/frogs, will draw a picture in their journals every week to monitor its growth with 100% accuracy.
2. The students, when observing the tadpoles/frogs, will record at least 2 changes or observations the tadpole undergoes weekly.
3. Before observing the tadpoles, the students will make a hypothesis on what they think they will observe throughout this activity with 100% accuracy.
4. After the tadpoles have transformed into frogs, the students will compare their groups’ frog to another groups’ frog recording at least 5 similarities.
5. After the tadpoles have transformed into frogs, the students will contrast their groups’ frog to another groups’ frog recording at least 3 differences.

Advanced Preparation by Teacher:
To prepare for this activity I will need a fish tank, milk jugs, tadpoles, perches for the frogs, and food (boiled lettuce). The tap water will have been sitting for 5-7 days to ensure that all of the chlorine has evaporated. Each of the groups of four will have an assigned milk jug that contains a couple of tadpoles. The students will be given journals to record their observations of the tadpoles throughout the activity. All the materials will be available for the students to use as needed.

Procedure:
Engage: This activity will give the students an opportunity to broaden their concepts of living creatures as they learn more about the metamorphosis and development of frogs. To grab their interest, the teacher will ask questions to the class to help set the stage. The following are some of the questions:
- What is a frog? (Knowledge)
- How does a frog become a frog? (Knowledge)
- Do frogs hatch from eggs? (Knowledge)
- What does a baby frog look like? (Knowledge)
- What is a tadpole? (Knowledge)
- What kind of habitat do tadpoles live in? (Knowledge)
- What kind of habitat do frogs live in? (Knowledge)
- What changes allow a tadpole to turn into a frog? (Application)

**Encourage:**
- Each group of desks will have a designated milk jug that will be the home of their tadpoles for the experiment.
- I will pass out the materials to put together each other the tadpole habitats.
- The fish tank will be used to put the frogs in once they have gone through the full metamorphosis.
- As a class we will put together our milk jug homes for the tadpoles.
- The milk jugs will be located in a spot of the room where it can be ¾ shaded.
- The students will assign one person in their group to feed the tadpoles a small pinch of lettuce every 2-3 days.
- The students will make a hypothesis about what they think they will observe throughout this activity (including different stages and major developments).
- Weekly the students will record observations and draw pictures illustrating their tadpoles’ growth.
- What happens if you feed the tadpoles too much food?
- How do you decide when to change the water?
- The students will need to discuss in their groups and decide how to solve these kinds of dilemmas.
- They will put different students in charge of each of these tasks and will be responsible to remind the students to carry out their jobs.
- As a class we will discuss what would happen in various situations.
- What will the class do when the tadpoles start growing legs?
- When do you know to move the tadpoles into the fish tank environment?
- This will require the students to do research on frogs and tadpoles on their own. Time will be provided for the groups to administer research in the computer lab on the internet.

**Engage:** As a class we will now explore different aspects of the growth from a tadpole to a frog. We will read stories pertaining to the process that a tadpole undergoes to become a frog. We will also watch *Animal Life for Children: All about Amphibians*, to address the lifecycle of frogs. The students will also do extended research on the internet. We can now address the questions that we initially asked before the students began exploring and experiencing the growth of
tadpoles. As a class we will illustrate a large poster containing the four main stages of a tadpole’s growth. Each of the groups will be in charge of illustrating a different stage and writing pertinent information. After each of the tadpoles has grown into a frog, we will set them free at a nearby pond. Their completed journals will then be collected and evaluated.

Adaptations/Enrichments:
Since the students will be working in groups, they will have the opportunity to compare and contrast their ideas about the tadpoles’ growth into frogs. This will enable students to pick up on characteristics that they normally would not have seen. Since most of the work is done in groups or as a class, this activity can meet various needs. Gifted students may compare and contrast the growth of their tadpole/frog to other groups, or a tadpole timeline found on the web in their journal entries. To aid students with special needs, we can make a list of changes the tadpoles are undergoing and keep them posted near the chalkboard so they can refer back to the list as needed. This activity also meets several of the Gardner’s Multiple Intelligences, such as interpersonal, naturalistic, spatial, and intrapersonal. This meets the spatial intelligence because it enables the students to express their observations through pictures. Both the intrapersonal and interpersonal intelligences are met because while the students are working in groups, they can also make observations on their own, and reflect accordingly. Finally the naturalistic intelligence is met because the students are given an opportunity to work with a living species, which is a part of nature.

Self Reflection:
- Did the students get to explore the lifecycle of a frog while using their own meaning?
- Did the students effectively record the progression of the tadpole growing into a frog?
- Did the students formulate their own hypotheses about the tadpoles’ growth?
- Did the students work well together?
- Were the students able to properly observe their tadpoles when using the milk jugs?
- Did the kids gain anything from this experience?