

Rainbow Trout –survival in a classroom

Subject/ grade level (s): Sixth, Seventh and Eighth Grade Science

Materials: 55 gallon fish tank, air pump, filter system, aquarium water chiller, aquarium gravel, 300-400 Rainbow trout fish eggs, water conditioner, fresh water aquarium test kit, 3-five gallon buckets, one aquarium net, one fish net, aquarium vacuum, aquarium siphon hose, fish food aquarium thermometer, aquarium air stone

Standards: SPI 0607.2.4 Identify the environmental conditions and interdependencies among organisms found in the major biomes.

SPI 0707.7.7 Analyze and evaluate the impact of man’s use of earth’s land, water, and atmospheric resources.

SPI 0807.5.2 Analyze structural, behavioral, and physiological adaptations to predict which populations are likely to survive in a particular environment.

SPI 0807.5.3 Analyze data on levels of variation within a population to make predictions about survival under particular environmental conditions.

SPI 0807.5.4 Identify several reasons for the importance of maintaining the earth’s biodiversity.

Background information: Trout are easily adapted to various aquatic environments. Rainbow trout prefer cool, clear rivers, streams, and lakes, though some will leave their freshwater homes and follow a river out to the sea. The temperature tolerance of rainbow trout is from 32 to 70 degrees Fahrenheit. Their ideal range is between 55 and 60.

Lesson Objective(s): To observe, monitor, test, and record the daily changes in Nitrate, Nitrite, and Ammonia levels as they relate to the changes in the increasing number of hatching trout eggs. To test and record the pH levels of aquarium as the population of trout increases. To observe and record daily tank temperature. To understand how environmental conditions can have an impact on the living things in a given habitat.

Exploration: A local Trout Unlimited program provides the tank, chiller, and the trout eggs from a local fish hatchery. They help students with the set-up of the tank and equipment. Students will add the gravel and water. Students will measure the levels of Ammonia, Nitrite, and Nitrate in the tank. Students will record the tank temperature. The trout eggs are added to a net that is attached to the side of the tank. Students will measure and record the levels of the nitrogen compounds every other day until all the eggs have hatched.

Explanation: Students should explain what happens to each nitrogen level and how it relates to the population change of trout. Students should explain how environmental conditions change. What role does population growth have on environmental conditions?

Elaboration: Students should answer the following questions:

How does the change of eggs to fish impact the nitrogen compound levels?

How does population changes impact environmental conditions?

Does population growth have a positive or negative impact on a habitat? Give evidence supporting your answer.

What do you think will happen to the environmental conditions of the tank as the trout grow in size?

How can we have an impact on the environmental conditions of the tank?

Evaluation: Students should answer:

What can we do to give the trout a better chance at survival?

How can humans use the knowledge of their impact on environmental conditions?