

# Testing Darwin

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## **Standards of Learning**

Science LS.1, LS.8, LS.9, LS.11, LS.14

## **Purpose**

Students will:

- Determine if adaptation to environment is correlated to survival

## **Materials**

- 3 bags of beans
- 10 trays
- 10 clothespins
- 10 spoons (metal or plastic)
- 10 forks (metal or plastic)
- 10 tweezers

## **Background Knowledge**

Charles Darwin, British naturalist states, "I have called this principle, by which each slight variation, if useful, is preserved, by the term Natural Selection." Darwin's theory of natural selection (evolution) states that variation within species occurs randomly and that the survival or extinction of each organism is determined by that organism.

Animals must make adaptation to survive gradual changes within their environment. Adaptations need to be made so that animals are able to catch food and fight off their predators. Plants need to make adaptations in order to survive in drastic climate changes and varying populations. All organisms need to make changes and adapt to their habitat so that they can live comfortably in shelter and eat food.

The simulation below is geared to have students experience how adaptations affect the ability to obtain food.

## **Procedure**

1. Background – if this is a review of natural selection you could just review. If it is an introduction, you could set it up with a little story. On a distant farm, there exist 5 species of a creature called "AGIN". Each "AGIN" is similar except their mouth has variations. All "AGIN" eat beans. Some "AGIN"s have clothespin mouths, some have spoon mouths, some have tweezer mouths, and some have fork mouths. Each of you will play the part of **an** "AGIN" on this farm.
2. Pass out the materials and assign each student a specialized mouth. Demonstrate that they must hold the utensil in their mouth and try to get the beans from the tray.
3. Students will take turns trying to get 20 beans on the first trial in 60 seconds. If not their "AGIN" dies.



4. Students will try to get 20 beans on the second trial in 45 seconds. If not their “AGIN” dies, then 30 seconds, 15 seconds.
5. When an “AGIN” dies, the student can play the offspring of the surviving “AGIN”. Give them a new utensil.
6. At then end, the most likely survivors will be the spoon mouth “AGIN”s.
7. Discussion Questions:
  - What happens to animals that cannot compete with other animals in the wild?
  - Was Darwin correct when he said the fittest survive?
  - Can you think of any real-life examples of AGINs, where one species has a definite advantage over the other? What about on the farm?
  - Sometimes animals that are introduced into an area that they never lived in before, out compete and endanger resident species, why do you think this happens?
  - How do you think diseases can affect natural selection?

### **Extension**

- How does genetically engineering animals make them the fittest?

