Monohybrid Crosses and The Punnett Square Lesson Plan

Students will simulate a monohybrid cross between two heterozygous parents and utilize the experimental data to develop a Punnett Square for the prediction of the offspring. Students will learn and apply knowledge of key terms of inheritance during this exercise.

Primary Learning Outcomes
- Students will learn about monohybrid crosses
- Students will learn the terminology used in Mendelain genetics
- Students will be able to complete Punnett Squares for monohybrid crosses
- Students will be able to predict phenotypic and genotypic ratios for monohybrid crosses based on the Punnett Square

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Assessed Georgia Performance Standards

SCSh2. Students will use standard safety practices for all classroom laboratory and field investigations.

SCSh3. Students will identify and investigate problems scientifically.

SB2. Students will analyze how biological traits are passed on to successive generations.

Background
Monohybrid crosses are the first step to understand Mendelain genetics. Mendel's laws of inheritance should be discussed prior to this exercise.

Materials for a class of 30 sutdents
30 brown paper bags (15 labeled "Female" and 15 labeled "Male")
Bag of white beans
Bag of red beans
       (*Note*: The beans should be close to the same size)

Procedures
Step 1: Duration: 30 minutes (Teacher prep before class)
The instructor should prepare materials by labeling ½ of the bags *"Female"* and the other ½ *"Male"*. Next place 15 red and 15 white beans in each bag.

Step 2: Duration: 15 minutes
Introduce genetics and key terms (phenotype, genotype, trait, dominant, recessive, homozygous, heterozygous, etc.). Provide students with a brief description of Mendel's Laws of Independent Assortment and Segregation. Provide instructions for completing activity.