

INSPIRE GK12 Lesson Plan



Lesson Title	It's in the Genes
Length of Lesson	One (50 minute) class period
Created By	Calista Guthrie
Subject	Earth Science
Grade Level	7 th grade
State Standards	7 th : 1b, 1d, 1h (Inquiry); 3d (Life Science)
DOK Level	DOK1, DOK2, DOK3
DOK Application	Draw, List, Illustrate, Report, Match, Name, Recognize, Predict, Compare, Show, Draw Conclusions, Explain Phenomena in Terms of Concepts
National Standards	5-8: A (Inquiry); C (Life Science); G (History and Nature of Science)
Graduate Research Element	Engineering plants and micro-organisms for bioremediation.

Student Learning Goal:

MS 7th Grade:

1(b) Students will make observations and inferences about their paper pets and predict what the baby paper pet will look like based on dominant and recessive traits. 1(d) Students will make a table of traits, dominance, the alleles received from each parent, and trait expressed in baby. 1(h) Students will determine the trait of the baby paper pet and explain why the baby received certain traits based on evidence for dominant traits the parents carry. 3(d) Students will learn that through fertilization traits are passed down from parent to offspring due to contribution of alleles from each parent.

National Science Education Standards of Content 5-8:

A: Inquiry: Students will develop descriptions, explanations, predictions, and models of heredity in paper pets; Students will use evidence to explain why their baby has certain traits

C: Life Science: Reproduction and Heredity with regard to organism traits passed down from the mother through the egg and the father through the sperm, heredity is passing down of traits from generation to generation, heredity is passed down through genes which are located in the chromosomes of each cell

G: History and Nature of Science: Scientific innovators had to break through accepted theory to make advancements in science by developing their own conclusions that we take for granted in knowing today.

Materials Needed (supplies, hand-outs, resources):

Paper pets made in the previous class or for homework (have students develop their own animal, draw it, and list characteristics about it)

PowerPoint (INSPIRE_Guthrie_05.01.12_Genetics)

Colored popsicle sticks or straws, construction paper, colored pencils/ crayons



Lesson Performance Task/Assessment:

The PowerPoint (INSPIRE_Guthrie_04.01.12_Genetics) will be presented first, explaining Gregor Mendel and genetics, and heredity. As the PowerPoint is covered, the teacher should present questions to the students that will encourage students to explore their own curiosity and develop their own questions to ask. After the PowerPoint lesson, students will get into pairs and breed their paper pets. Each pair will make a table listing the dominant and recessive traits expressed in the parents (see Teacher Notes). Each student will draw a popsicle stick to see what two alleles will be contributed by the parent (green/blue = dominant and yellow = recessive).

Lesson Relevance to Performance Task and Students:

The capture activity for this lesson is for the students to breed their paper pets that they invented in the previous class (or for homework). Student pairs will present their baby paper pet at the end of class.

Anticipatory Set/Capture Interest:

The initial capture of this lesson is for students to guess how we know the people in the opening photograph are related. Students will point out the stripes on the people's shirts. Ask everyone in the class with a navy shirt on to raise their hand (or whatever color shirt their uniform is). Then ask those that raised their hands if they are all related.

Guided Practice:

Students will listen and interact throughout the lecture. The instructor should check regularly for understanding by involving the students as much as possible in explaining why different traits are passed down. The lecture and task instruction should be completed with 25 minutes at least remaining for the activity. Paper pet babies will be presented to the class.

Independent Practice:

Students will work in pairs to breed their paper pets. They will list at least six traits that their paper pets have and decide which ones are dominant. They will then draw popsicle sticks to see if the baby will get the dominant or recessive traits.

Remediation and/or Enrichment:

Remediation – Have students write a paragraph explaining the traits of the baby, especially pointing out the reason for a recessive trait expressed in the baby.

Enrichment- Have students do a case study with their family. It could be on: eye color, hair color, hairline, toes, rolling the tongue, wiggling ears, etc.

**Check(s) for Understanding:**

Encourage student interaction in class by asking questions and allowing them to ask questions. Have them repeat to you that genetics is the study of heredity. Heredity is the passing down of traits through genes. Genes are made of two alleles, one from the mother and one from the father. Alleles can be dominant or recessive.

Closure:

To wrap up the class students will present their paper pet “child”.

Possible Alternate Subject Integrations:**Teacher Notes****Table:**

Trait	Dominant Trait (D)	Recessive Trait (r)	Allele Contributed		Baby's Trait
			D	r	
Werewolf or Vampire	Team Jacob	team edward	D	r	Werewolf
Wings or arms					
Scales or fur	Scales	fur	r	r	Fur
Claws or Nails					
Teeth or Fangs					

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Gryffindor or Slytherin	Gryffindor	slytherin	D	D	Gryffindor
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