MIX-N-MATCH TRAITS  (1 HOUR)

Addresses NGSS
Level of Difficulty: 2
Grade Range: 3-5 (Plus Grade 6 Extentions)

OVERVIEW
Students will participate in a scavenger hunt with their peers to classify inherited and learned traits. The scavenger hunt will include characteristics such as rolling your tongue, speaking another language, and hair color.

Topic: Inheritance of Traits

Real-World Science Topics
• An exploration to distinguish between inherited and learned traits
• An exploration of to explain a person’s own characteristics

Objective
After completing this activity, students should be able to distinguish between characteristics that are inherited and those that are a result from an individual’s interaction with the environment. Students in grade 6 should also be able to consider variations of inherited traits.

NGSS Three-Dimensions

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<thead>
<tr>
<th>Science and Engineering Practices</th>
<th>Disciplinary Core Ideas</th>
<th>Crosscutting Concepts</th>
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<tbody>
<tr>
<td>Constructing Explanations and Designing Solutions</td>
<td>LS3.A: Inheritance of Traits</td>
<td>Cause and Effect</td>
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<td>• Use evidence (e.g., observations, patterns) to support an explanation.</td>
<td>• Other characteristics result from individuals’ interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment. (3-LS3-2)</td>
<td>• Cause and effect relationships are routinely identified. (3-PS2-1)</td>
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<td>• Cause and effect relationships are routinely identified, tested, and used to explain change. (3-PS2-3)</td>
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Background Information

What are traits?
Traits are unique features or qualities of an organism. Traits include hair color, beak shape, height, and leaf shape. Living organisms have different combinations of traits that are passed from generation to generation.

What are environmental traits?
These are characteristics of the way one acts and are acquired from the environment they are raised in and live in. These are learned traits. Examples include speaking a language, writing, playing a sport, and enjoying different types of food.

What are inherited traits?
These are characteristics of one’s physical makeup and are traits that were passed down from a parent or parents. Our genes encode the instructions that define our traits. Each of us has thousands of genes, made of DNA, that are found in chromosomes. Inherited traits include eye color, hair color, the shape of our nose and height.
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Key Vocabulary
Hereditary - passing of traits from parents to offspring
Inherited - to receive genetic information and traits from a parent or parents
Environmental - traits are characteristics acquired from the environment they are raised in and live in

Materials Needed for Activity
• Copies of student scavenger hunt, student capture sheets
• Class set of Characteristic Cards and T-Chart

Teacher Preparation
Before students arrive, make enough sets of Characteristic Cards and T-Charts for pairs of students. Images can be added to cards to clarify traits.
1. **Warm-up Activity:** Play the video: [http://app.discoveryeducation.com/search?Ntt=genes+genetics+and+dna](http://app.discoveryeducation.com/search?Ntt=genes+genetics+and+dna)

   **Grades 3-5:** After the students finish watching the segment, ask them to demonstrate two traits from the videos and share one thing that surprised them from the video with a peer.

   **Grade 6 Extension:** After the students finish watching the segment, ask them to demonstrate two traits from the videos and share one thing that surprised them from the video with a peer. Tap into prior knowledge by asking the following questions:
   - How do you know how to write? Were you born with this trait or did you learn it?
   - How do you have your eye color?
   
   Answers will vary based on background knowledge and at this point all answers should be accepted.

2. Distribute the Scavenger Hunt. Explain to students they will have 15 minutes to go on a scavenger hunt to explore the diversity of their classmates. In each box they will write the name of a student that represents the trait in the box.

   **Grades 3-5:** Teachers at this level may need to read through the options and explain examples that may be unfamiliar to students. Images can be added to the scavenger hunt to help illustrate the traits if needed.

   **Grade 6 Extension:** Teachers at this level should allow students to read through the directions and ask clarifying questions.

3. Share with students the definitions of inherited and environmental traits. Inherited traits are passed from parents to offspring from genetic information. Environmental traits are characteristics acquired from the environment they are raised in and live in.

   **Grades 3-5:** Ask students to put a check mark on boxes that are traits inherited from parents. Students will shade the boxes that are environmental traits. Students at this level might need to go over a couple examples before starting.

   **Grade 6 Extension:** Ask students to put a check mark on boxes that are traits inherited from parents. Students will shade the boxes that are environmental traits. Students at this level should be able to distinguish the two based on the definitions. Ask them to think about other variations of inherited traits on their chart. For example, a person that has red hair. What are other variations of hair color? (Brown, black, blonde, etc.)

4. Guide students to consider additional traits using the Characteristic Cards. Refer students to the Characteristic Cards provided. Explain to students that they will work in pairs and read each card. They will then determine if it is an example of an inherited trait or a learned behavior. Students will sort their cards into two columns using the Characteristic T-Chart.

   **Grades 3-5:** Teachers at this level may need to read through the options and explain examples that may be unfamiliar to students. Images can be added to the cards to help illustrate the traits if needed.

   **Grade 6 Extension:** Teachers at this level should allow students to read through the directions and ask clarifying questions.
5. Explain to students that you will walk around to check their completed chart. Students that finish early can brainstorm additional characteristics and add them to their lists.

6. **Warm-up:** Ask students to summarize the difference between inherited and environmental traits by reflecting on their own characteristics.

   **Grades 3-5:** Students should be able to list three environmental traits and three inherited traits. Then, the student will compose a one-paragraph note to their teacher explaining what they learned about traits. Students can also inform the teacher about what they liked/disliked about the lesson or are still unclear about.

   **Grade 6 Extension:** Students should be able to list five environmental traits and five inherited traits. Students will then complete The Most Important Thing about Traits capture sheet.

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**Extension Activity**

Students can play charades for other students to identify the trait that is being acted on and categorize it as inherited or learned. For example, acting out a squirrel burying their acorns. After identifying the behavior, students would classify it as a learned trait.

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**Sources**

http://app.discoveryeducation.com/search?Ntt=genes+genetics+and+DNA
Scavenger Hunt
**Characteristic Cards**

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**Characteristic T-Chart**

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The Most Important Thing about Traits

The important thing about

_________________________ Traits ________________________

is ____________________________

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But, the most important thing about

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is ____________________________

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