LESSON PLAN - 5th Grade - Science

Student Teacher: _____**Danielle Lewerenz**_____ Grade Level: _____**5th Grade**_____

Subject: __**Science**___ Lesson Plan Topic: ___**Heredity Traits**

Planned For (Day/Time): ____**Monday, April 23rd, 2012**_____

Theme: Evolution and Traits of an Organism

- **Objectives:**
  a. Students will be able to:
     i. explain how traits are influenced by the environment and genetics
     ii. identify observable traits
     iii. Compare observable traits with other students
  b. List national, state, and local objective:
     i. L.HE.M.1 - Inherited and Acquired Traits - the characteristics of organisms are influenced by heredity and environment. For some characteristics, inheritance is more important; for other characteristics, interactions with the environment are more important.
     ii. L.HE.05.11 - explain that both the environment and the genetics of the individual influence the traits of an individual.
     iii. L.HE.05.12 - distinguish between inherited and acquired traitsM.UN.01.04 Identify the different denominations of coins and bills.

Adapted from **An Inventory of My Traits** Lesson Plan
(http://teach.genetics.utah.edu/content/heredity/html/inventory.html)

Introduction to Heredity Traits		
Materials	**Teacher:** Inherited Human Traits: A Quick Reference worksheet (http://teach.genetics.utah.edu/content/heredity/docs/traitsreference.pdf) Chart paper, markers, stickers, **Allow for 50 minutes**	**Student:** Pencil, paper, worksheet An Inventory of My Traits - Survey worksheet An Inventory of My Traits - Data Table worksheet stickers
Introduction (activate prior knowledge)	**Ask (*Engage*):** Does anyone know what a trait is? Is anyone left-handed? Being left-handed is a trait. A trait is a characteristic feature or quality distinguishing a particular person or thing. Traits can be physical (hair color, eye color) or behavioral (birds flying south for the winter). We are starting a lesson on traits and heredity. Heredity is the transmission of characteristics from parent to offspring (human, plants, animals).	
Instructional Strategies	**Teacher:** **1. Engage - Trait Game** Humans can share traits, like being right or left-handed. Let's play a little game to see how many traits you have in common with each other. - Ask all students to stand. - Have a volunteer call out one of their traits at a time, beginning with #1 on the survey and continuing in sequence. As each trait is called	**Student:** Play trait game Discuss vocabulary Ask questions about the traits

	out, direct students who do not share the trait to sit down; students who share the trait remain standing. Once a student sits down, they do not get up again. • Continue in this way until the volunteer is the only one standing. Count the number of traits it took to distinguish the volunteer from everyone else in the class. Compare this number with the students' predictions. • Repeat with several additional volunteers	
	2. Exploration - Student survey of traits "Explain that traits are observable characteristics we inherit from our parents. Some traits are common in a population (our class) while others are not. And, every person has a different overall combination of traits that makes them unique." (Utah.edu) Hand out student inventory. Explain the worksheet to the students. Go over the traits on the worksheet to make sure students understand what each one is. **Give students time to complete worksheet** **3. Group Activity - tabulate data and create class bar graph** Have students form groups and complete one data table for each group " After students complete the survey, have them tally their group information on the data table" utah.edu	Students complete An Inventory of My Traits - Survey worksheet independently Have students form groups (4-5 students) and complete an Inventory of My Traits - Data Table worksheet (one per each group) Create a class bar graph with stickers
	3. Explanation - Create individual bar graph of results Once a class graph has been created, each student can create a bar graph. They can chose a few traits from their group results and create their own bar graph. Draw a bar graph on the graph sheet (individual)."	**Students create their own bar graphs by picking a few of the traits from the survey**
Close / Assessment	Assessment - Bar graph results (Class and individual), participation, questions and response Homework **- Family Traits Survey**	
Connection	Math connection - construct and read a bar graph, calculate percentages from graphed information	
Reflection	This lesson went fairly well. As a teacher, I need to get better acquainted with the subject matter so I don't have to rely on the teacher handout so much. I'd feel better if I could answer the students' questions from memory. This lesson was a good way to introduce the topic of hereditary traits. The students were really engaged in the activities and it's something they can take home and do with their family. Of course, I need to be more careful with the terms I used as some students have unconventional home lives. I didn't time this lesson, so I need to do that the next time so I can add times to each section. We did complete in 50 minutes.	

Appendix K   SUMMARY OBSERVATION REPORT

Student Teacher: ___Danielle Lewerenz_____

Semester: Fall   **Spring**   **Year:** _____2012_____

On-site Coordinator: ___Madeleine Karcz_____

Title: _Instructional Specialist_____ **School:** _Mark Twain School_____

Experience (Years): _13 years_____ **Degree/License:** ___Ed.S_____

Date/Time of Observation: _4/26/12 1:00 pm_ **Lesson Observed:** Genetics: An Inventory of my Traits_

PREPARATION and PLANNING: Lesson Plan typed and forwarded well in advance of observation. Reproducibles copied, chart paper graph prepared.

INSTRUCTIONAL METHODS and MANAGEMENT: Introduced lesson and activated prior knowledge regarding traits. One student made a good connection with "IB traits," the statement regarding physical versus behavioral traits helped to clarify. The synonym "characteristic" was introduced. The idea of observable traits was introduced.

Smart Board used to display pictures of specific traits; some discussion followed as students checked each other for these traits. Early in the lesson, Ms. Danielle reminded the fifth grade class that as they found differences between themselves, they had agreed to view these as ways they were "unique," so they would respect differences. (nicely embedded management and connection to IB Learner Profile traits)

Students were grouped by fours to compare and tally their traits. Objections to groupings were handled quickly and effectively. Each group selected a recorder, who then added their group's data to the class graph. Discussed percentages for traits in the general population. Related jeans/genes to homophones lesson, on the board as part of the daily agenda. Went through an example of long division with decimals during introduction to calculating percentages. Introduced idea of inheritance.

ASSESSMENT: Construction and discussion of class bar graph. Written reflection. Homework focused on Family Traits. (good parental involvement connection)

PROFESSIONALISM: Well managed transdisciplinary lesson. Great connections made throughout. Discussion handled informally: call outs allowed. All materials ready and available. Very engaging lesson. Smart Board technology used well here. Good anticipation of possible misconceptions and behavior.

RECOMMENDATIONS: Consider accelerating pace of the traits discussion and having students raise hands for just a few, then working with a partner to complete Traits Inventory. Then have two partner pairs join to complete group tally. When talking percentages with fifth graders, I would relate to "__ out of 100" each time, such as "only 7% of people are left-handed. That means, out of every 100 people, only about 7 will be left-handed. What will the other 93 people be?" This will help to solidify the idea of % as out of 100. Also, since stickers were used to construct class graph, I would refer to it as a pictograph. To make a bar graph, I would use graph paper and color in one square for each person in group.

On-Site Supervisor (Signature) _Madeleine Karcz (electronic signature)_ Date: _4/26/12_____

Trait	Frequency in General Population*
Tongue Rolling	Can roll tongue — 70% Cannot roll tongue — 30%
Handedness	Right handed — 93% Left handed — 7%
Hand Clasping	Left thumb on top — 55% Right thumb on top — 44% No preference — 1%

Vocabulary:
Trait
Heredity

Common Misconceptions

Students may think that the more common traits are "better", but this is not the case. Some traits simply show up more frequently in the human population.

Students familiar with the terms "dominant" and "recessive" may think that dominant traits are more common than recessive traits. However, frequency has very little to do with whether a trait is dominant or recessive. A dominant trait is not necessarily more common and a recessive trait is not necessarily rare in a population. A good example is the trait of polydactyly (having an extra finger or toe). This trait is caused by a single dominant gene, yet is not all that common in the population.

Worksheets:

Name _____

Date _____

Print-and-Go™
http://learn.genetics.utah.edu
Genetic Science Learning Center

An Inventory of My Traits – Survey

What combination of these traits do you have? Complete the survey to find out.

1. I have detached earlobes ☐ Yes ☐ No

2. I can roll my tongue ☐ Yes ☐ No

3. I have dimples ☐ Yes ☐ No

4. I am right-handed ☐ Yes ☐ No

5. I have freckles ☐ Yes ☐ No

6. I have naturally curly hair ☐ Yes ☐ No

7. I have a cleft chin ☐ Yes ☐ No

8. I have allergies ☐ Yes ☐ No

9. I cross my left thumb over my right when I clasp my hands together ☐ Yes ☐ No

10. I can see the colors red and green (I am not color blind) ☐ Yes ☐ No

11. The hairline on my forehead is straight. ☐ Yes ☐ No

12. I am a: ☐ Male ☐ Female

Name _____

Date _____

An Inventory of My Traits – Data Table

How many people in your group have each trait?
Fill in the data table below by counting the number of people who marked "yes" and
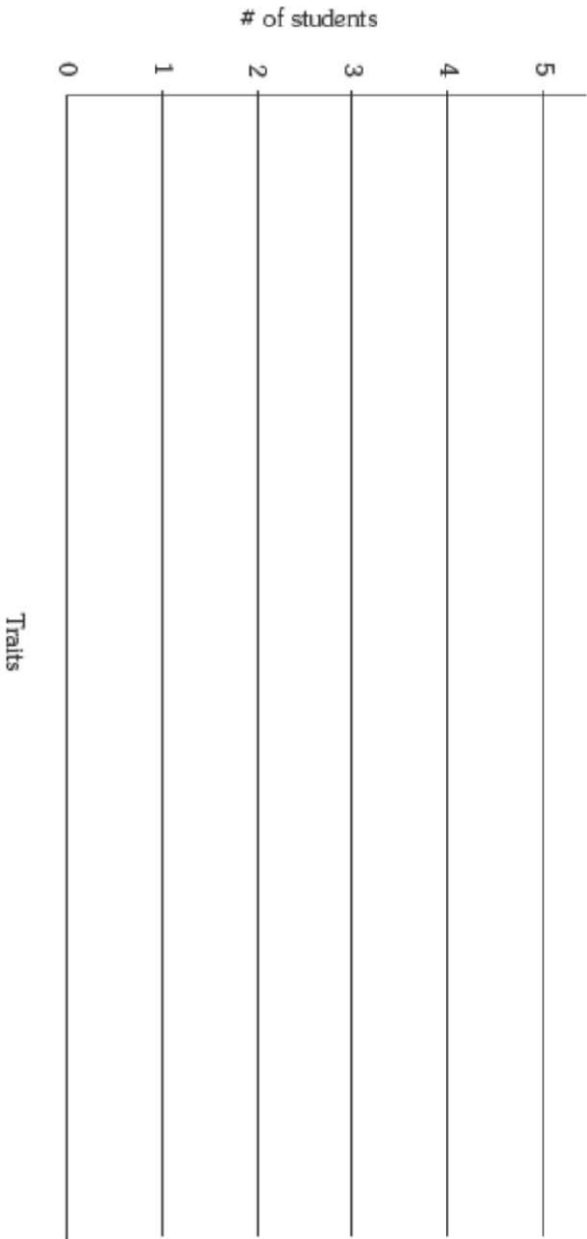the number of people who marked "no" for each trait.

TRAIT	YES	NO
Detached earlobes		
Tongue rolling		
Dimples		
Right-handed		
Freckles		
Naturally curly hair		
Cleft chin		
Allergies		
Cross left thumb over right		
See the colors red and green		
Have a straight hairline		

Name _____

Date _____

An Inventory of My Traits – Graph

Make a bar graph showing how many people in your group answered "yes" for each trait.
Be sure to label each trait under the bar you draw for it.

# of students

5

4

3

2

1

0

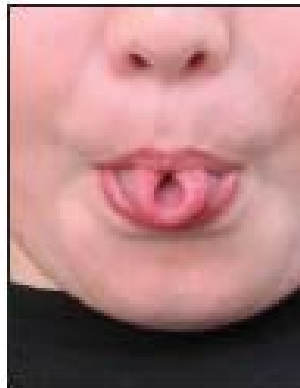Traits
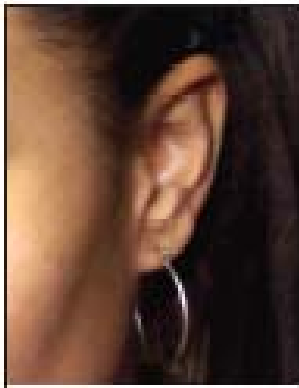
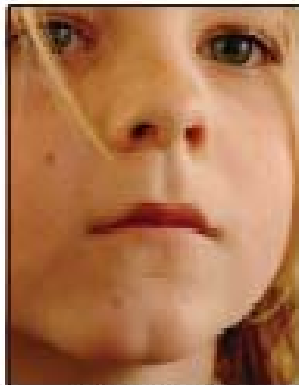|			
Attached earlobes	Can roll tongue	Dimples	Right-handed
Freckles	Naturally curly hair	Cleft chin	Allergies
Cross left thumb over right	Can see red & green		