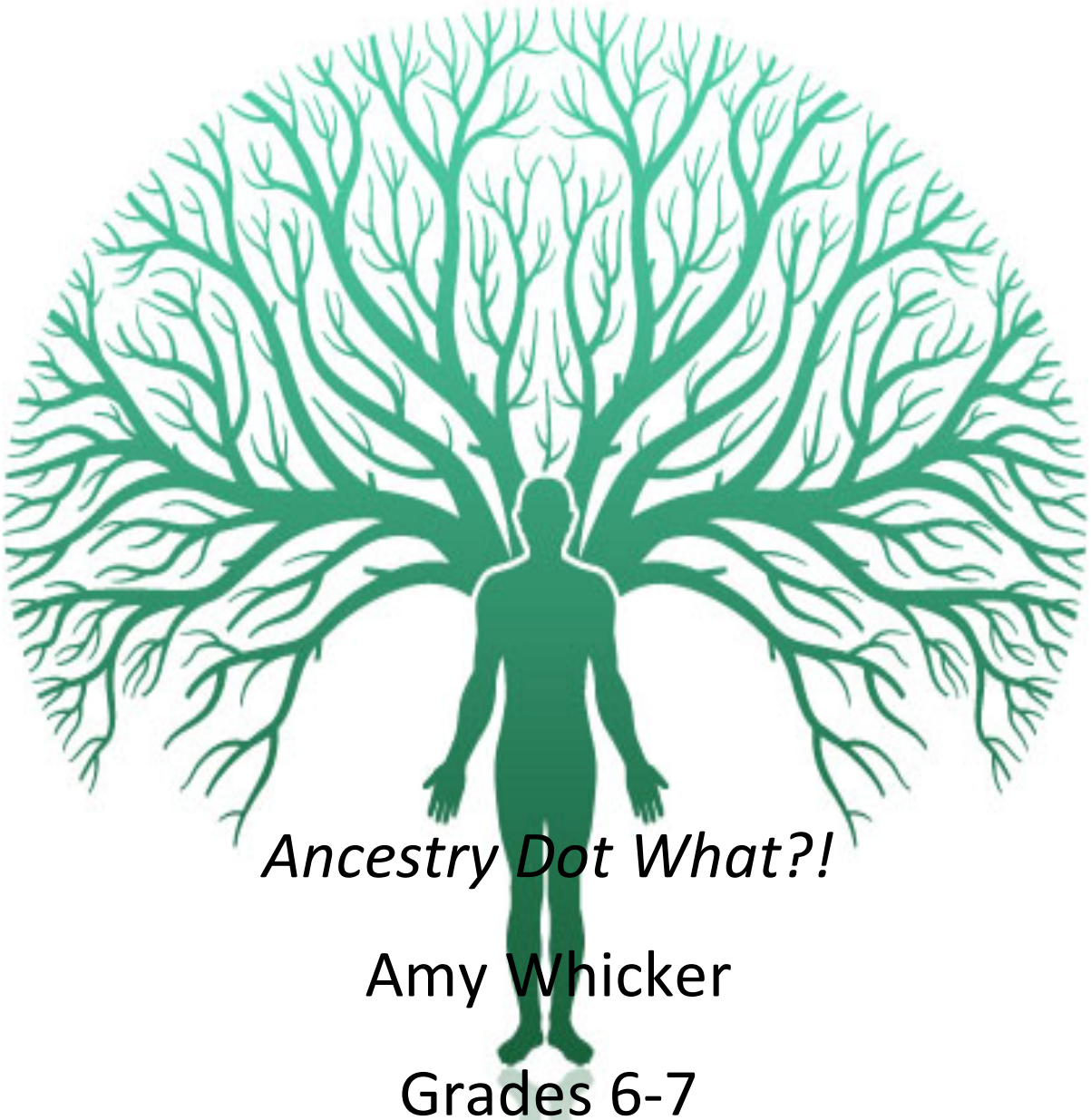


Ancestry Dot What?!

Amy Whicker

Grades 6-7

July 17 – 20, 2017

I. Introduction

A. Rationale

The increased interest of our society in ancestry, cultural origins, and DNA research is undeniable. We see a plethora of commercials, websites, cell phone apps, and DNA kits related to discovering who we are, where we came from, and what genetic factors may shape our future. We hear about people finding long-lost relatives, discovering what countries and cultures have shaped their family, and using DNA research to determine genetic probabilities of diseases. The skills, content, and concepts included in this curriculum unit of ancestry are both highly intriguing and multi-dimensional. The lessons and learning experiences provided for students include a sample spectrum of the diverse pathways one can pursue when researching ancestry and its applications. As we give students opportunities to explore the many aspects of ancestry, its importance and relevance in their lives will ultimately be chosen by their own interests and personal connections.

Content

The content explored in this unit features aspects from several disciplines, including science, math, art, writing, and cultural studies. Each lesson combines aspects of the disciplines and gives students the chance to become real-world practitioners by seeing the need to mesh multiple content areas. Students get the chance to see the importance of ancestry in these several fields and possibly pique their interest in the variety of careers that it could encompass. Throughout the unit's four lessons, students become data analysts, artistic experts, internet website critics, genetic analysts, and ancestry writers. The content standards explored in each lesson are listed below and included in the lesson plan templates. Many of the products and assessments students complete in the unit, however, pull together content areas to encourage this real-life approach.

- Lesson 1 – Grade 7 Science
    - 7.L.2.2 Infer patterns of heredity using information from Punnett squares and pedigree analysis.
    - 7.L.2.3 Explain the impact of the environment and lifestyle choices on biological inheritance (to include common genetic diseases) and survival.
- Lesson 2 – Grade 7 Math and Science
    - 7.SP.A.2 Use data from a random sample to draw inferences about a population with an unknown characteristic of interest.
    - 7.SP.B.3 Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities.
    - 7.L.2.2 Infer patters of heredity using information from Punnett squares and pedigree analysis.
- Lesson 3 – Grade 6 Language Arts and Social Studies
    - CCSS.ELA-Literacy.W.6.1 – Write arguments to support claims with clear reasons and relevant evidence.
    - CCSS.ELA-Literacy.RH.6-8.7 – Integrate visual information (e.g. in charts, graphs, photographs, videos, or maps).
    - SS.6.G.1.4 – Explain how and why civilizations, societies and regions have used, modified and adapted to their environments (e.g. invention of tools, domestication of plans and animals, farming techniques and creation of dwellings).
- Lesson 4 – Grade 7 Language Arts and Science
    - CCSS.ELA-Literacy.RH.6-8.5 – Describe how a text presents information (e.g. sequentially, comparatively, causally). Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

- 7.L.2.3 – Explain the impact of the environment and lifestyle choices on biological inheritance (to include common genetic diseases) and survival.

Concepts

All four of the unit's lessons are centered around the common concept of systems. The essential understanding that students should draw from each lesson focuses on how systems influence outcomes. While this unit centers on how the systems of genetics, culture, environment, family and lifestyle choices influence the outcomes of personhood, the concept of systems and its influence on outcomes can be applied to many other fields. Systems surround our world and dictate the outcomes of virtually every aspect of daily life, making this concept highly important for learners. We see systems of law that govern the flow of traffic, systems in the human body that influence our health, and systems of academics that influence the order of what is learned. The nature of systems can also result in interconnected and interdependent relationships, another concept that has larger implications past ancestry. For example, through the unit lessons, students see that the outcome of a person's physical features is influenced by a combination of genetics and environment, systems that are interdependent based on the individual and the trait of interest. Challenging students to see this diversity of system relationships also gives them a concept that can be applied to other contexts and have lasting importance for their own identity. By centering all four unit lessons around the essential understanding of how systems influence outcomes, students come away with a broad and global understanding that surpasses the topic of ancestry.

Skills

The most crucial skill that is incorporated into all of the unit lessons, assessments and activities is critical thinking. Every activity included requires students to look at themselves and the world through an analytic eye. At the end of the unit, students should be able to see in themselves and others evidence of system influence, such as genetics, culture, family, society and lifestyle choices. They will also be required to critically think about the responses they hear from their peers and how it fits into their own views, building their academic self-concept. Another skill that comes into play throughout the unit is expression through writing. The lessons feature opportunities for students to be asked questions of varying levels of cognitive demand and respond through writing. It is suggested that students be provided with journals to document their journey through the unit and provide a free space for responses and sharing. Encouraging this writing expression will allow them the opportunity to see what they are internalizing through the group discussions and activities. Another critical skill developed in students through the unit is organization of thought and information. Students are asked in the lesson activities to create several graphic organizers and mini-presentations to convey their ideas. While some of the lessons give students creative space to choose a method of organization, they should learn throughout the unit what makes an organizer more or less effective in presenting their idea or answer. This skill too has lasting impact on students' academic and future careers.

B. Differentiation for Gifted Learners

This unit includes several aspects of differentiation that is both engaging and appropriate for gifted learners. The differentiation included in the lesson plans is broken down into four main categories: (1) Content, which includes giving students opportunities to explore the material in varying levels of complexity, form, and discipline area (2) Process, which varies how students reach the learning objectives, (3) Product, which allows students freedom in what type of work or demonstration proves their learning, and (4) Learning Environment, which provides students with diverse options for their surroundings, such as partner work or seminar-style questioning. These main types of differentiation techniques can also include other aspects, such as complexity, challenge, and creativity. Details from the lessons in the unit and how they meet these differentiation goals will be explored further and are included in each individual lesson template.

Content

The first unit lesson demonstrates differentiation of content by giving students an opportunity to explore the topic of ancestry in multiple disciplines. The lesson features the Taba concept development model that asks students to list a variety of traits and human characteristics that could be explored under the umbrella of "ancestry". This open-ended style of questioning allows students to pull concepts from multiple content disciplines, like cultural traditions, scientific genetics, mathematical probabilities, and societal influences. This lesson emphasizes for students early in the unit the importance of pulling from multiple contents in their thinking. In the third unit lesson, students are exposed to another lesson model called visual thinking. This model asks them to analyze works of art by making observations, drawing inferences and creating connections with ancestry concepts. The opening and closing of the lesson gives students a chance to explore art galleries to select pieces that display features of diverse cultures and of their own personal heritage. The content pathway that students can pursue by choosing their own art pieces and explaining their choices gives an opportunity for differentiation and creativity. The model provides students the opportunity to bridge content areas of social and cultural studies, scientific genetics and language arts to articulate their thinking. The open-ended nature of art analysis is perfect for the gifted student in giving them freedom to see a work from multiple perspectives and make endless observations.

Process

In the second unit lesson, students are tasked with becoming practitioners in a discipline through the Bruner model, emphasizing a creative thinking process. Students become real-world data analysts by taking statistics from a litter of kittens and determining who might be litter mates. This lesson model requires critical thinking processes but also features differentiation options for teachers to employ. For example, the teacher may decide to give students one of the kitten names and ask them to find the corresponding litter mate or to challenge them with finding both names. This allows for differentiation in levels of challenge based on student readiness. Unit lesson four also features a differentiation in thinking process. The lesson requires students to create a profile by thinking through multiple perspectives, viewing themselves in past, present, and future lenses. Students must project what their futures may look like and how people may view them historically. Thinking what their career and families may look like through the influences of genetics, society, family and personal choices requires critical thinking and prediction. This too lends itself perfectly to the gifted individual because of its open-ended nature and endless possibilities. Not having fixed solutions gives gifted students multiple pathways to process and internalize concepts.

Product

A key piece in the unit activities features a student choice board. The board provides a wealth of differentiation in both content and process, but the primary result for each student will be different products of learning. The board is divided into three rows, including research and writing products, science and genetics explorations, and ancestry crafts. Each block within the row allows students to create diverse projects, such as designing and conducting an interview, researching a genetic trait and creating a poster pedigree chart, or designing an ancestry tree. While each product focuses on a different aspect of ancestry, all blocks of the choice board challenge the gifted student to take ownership of who they are and what influences them to be this way. Allowing students to pursue a personal area of interest in the broad field of ancestry maintains the academic challenge and personal connection that gifted students crave. Throughout the individual lessons as well, students are given the opportunity to create products for the purpose of group discussion, such as graphic organizers, posters and digital presentations. This differentiation too provides the gifted student with an opportunity to show creativity and depth at their readiness level.

Learning Environment

The comprehensive ancestry unit features opportunities for differentiation in learning environment primarily based on teacher discretion. Depending on student readiness and learning profiles, the teacher may decide that students may benefit from working with a peer or group or that individual journaling and reflection is needed instead. The environment around each lesson, however, encourages students to think deeply and share openly. Creating the safe space for students to feel free to share their own ancestry knowledge or personal discoveries begins with effective lesson openers. The beginning of each lesson features a hook that serves to both intrigue students and activate prior knowledge. This opening should lead to deep dialogue, respect for peer opinions, and critical thinking throughout the lesson content as well. The most important lesson opener of the unit is conducted before lesson one and allows students to circulate the room to find fellow students with certain traits or traditions. This serves to both get students talking with each other and to begin thinking about visible and invisible characteristics that shape personhood. Each lesson model included, as well, differentiates the learning environment by changing the classroom framework. The Taba and visual thinking lessons require an open discussion environment with endless answers and opinions. The Bruner lesson features a more analytic environment, where one solution is best and developing an accurate thinking process must be explored through collaboration. These diverse environments allow gifted students to see the unit through different lenses of complexity and challenge based on personal strengths and academic readiness.

II. Goals and Outcomes

1. **Content Goals and Outcomes** – To develop understanding of the multi-faceted dimensions of ancestry and origins, including culture, genetics, familial and lifestyle choices.
    a. Students will be able to…
        i. Describe factors affecting physical, emotional and personality traits and tendencies, such as heredity, genetic probability, and lifestyle decisions.
        ii. Compare data to determine relationships of phenotypes between siblings, explaining why there are similarities and differences based on dominant and recessive traits.
        iii. Analyze and examine the major systems that affect the genotype and phenotype of individuals, including cultural, genetic, environmental and probability systems.
        iv. Make complex observations about works of art and infer methods of adaptation to environments in cultural communities
        v. Create a biological/historical profile that features critical information for a target audience.

2. **Process Goals and Outcomes** – To develop critical thinking skills and make connections between the physical, emotional, and cultural aspects of ancestry.
    a. Students will be able to…
        i. Categorize and re-group aspects of human characteristics into appropriate divisions, explaining choices and labeling with critical thinking skills.
        ii. Collect and synthesize data for similarities and differences.
        iii. Work collaboratively in partners and groups.
        iv. Communicate reasoning based on a target audience and purpose.
        v. Represent themselves through multiple perspectives, including past, present and future lenses.
        vi. Organize ideas and thinking processes into effective presentations.
        vii. Internalize unit topic by choosing an area of interest and creating an original product.

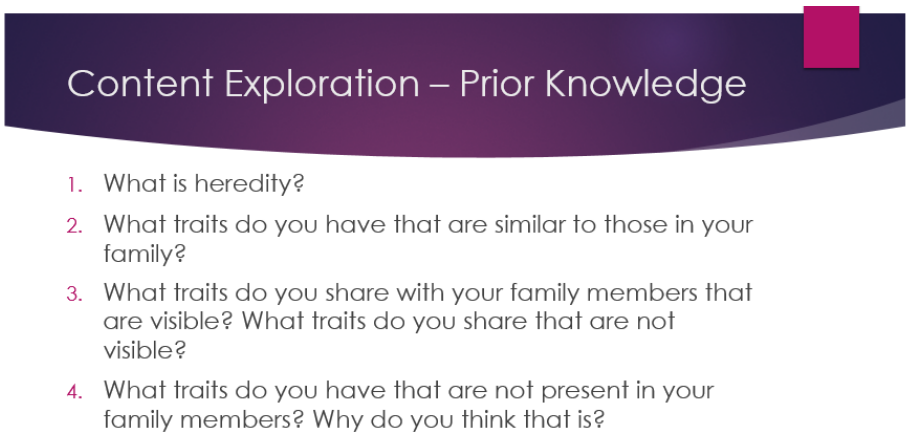
3. **Concept Goals and Outcomes** – To understand the concept of systems and how they influence outcomes.
    a. Students will be able to…
        i. Determine what systems influence the outcomes of phenotypes and genotypes, taking into account the multiple facets of genetics, environment, family, and societal influences.
        ii. Describe how these systems interact to influence the outcomes of an organism, including independent and interdependent relationships.
        iii. Predict and infer how systems have influenced communities pictured in works of art.
        iv. Reflect on the influence of systems in their own lives and synthesize their thoughts into a summary slogan.

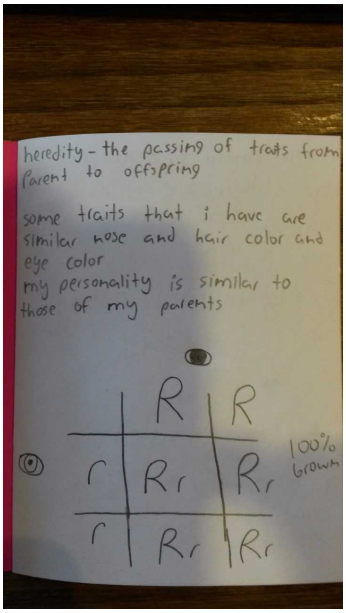
III. Assessment Plan

Formative

To assess students' learning throughout the unit, students will be given opportunities to respond to critical thinking questions in personal journals. The questions included give students the chance to think about their own experiences and thoughts before discussing with a peer or the rest of the class. Depending on student personalities and class dynamics, the teacher may decide to spend more time on individual journal time, peer sharing or whole-group discussion. What is important is that students are given the chance to reflect on what they are learning and internalizing through each lesson.

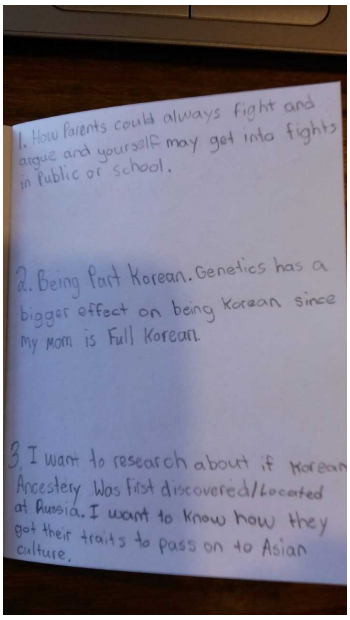
Below are examples of student questions displayed on the board and journal responses before and after lesson one. (Other journal questions are included in the PowerPoint located in the unit resource section.) Giving students time to think about prior knowledge allows for a richer class discussion.



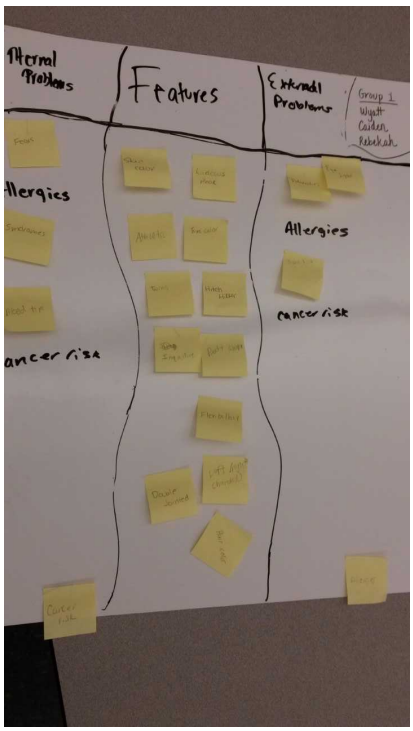


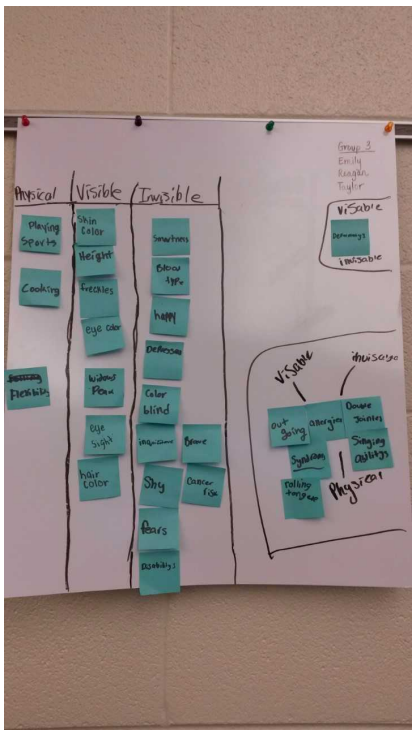
Wrap-up: Journal Time!

1. What influences the outcome of a person's characteristics? Provide examples to demonstrate your understanding. (Example: The likelihood of a person having diabetes is influenced by….)
2. Describe a characteristic you have that is influenced by more than one system. Describe if one system influences that characteristic more than the other and how you know.
3. Design a "dream" project of interest for our next lesson. (Would you like to investigate a trait you have and where it comes from? Would you like to research a country that your ancestors came from? Would you like to explore probability models to see the likelihood of your children having your traits?)

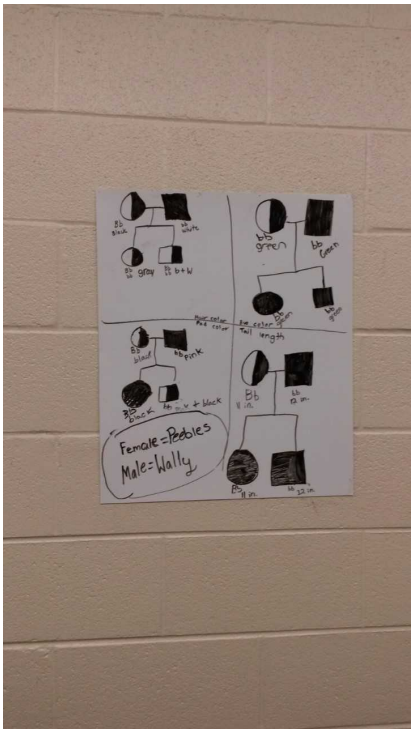


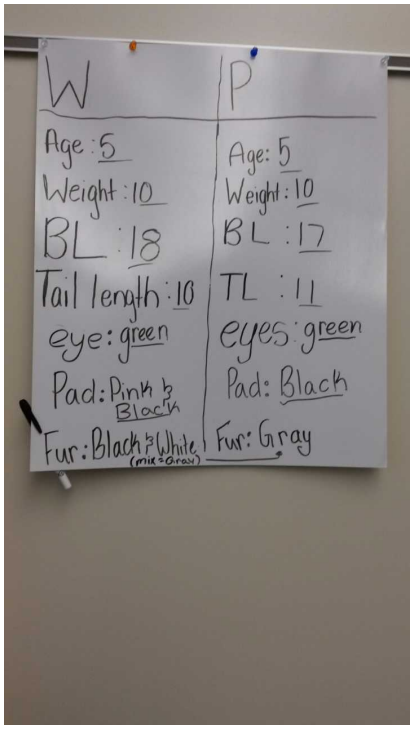
Each lesson also features some type of formative product of learning that can be used to assess student depth of understanding. In lesson one, students create a poster-sized collection of categorized and re-categorized items that would be necessary to explore in the unit of ancestry. Based on student categories used, the teacher can decide if students are understanding the concept of systems. The purpose of the categorization is to push students to see that aspects of their traits can be grouped according to systems of influence and that these systems can be interconnected. Allowing students the chance to name the categories of influence should lead to self-discovery of these systems. By giving students the post-it notes and poster space, students can also move items easily and discover that some features or traits fit into multiple categories, allowing for discussion about the interdependence of system influence.





In lessons two and three, students are asked to create graphic organizers to demonstrate understanding. While sample graphic organizers are included in the lesson plans and accompanying Powerpoint, students are given flexibility in using an appropriate organizer to demonstrate understanding. In lesson two, students must use an organization method of their choice to gather and analyze data, showing which two cats are litter mates through critical thinking and process of elimination. In lesson three, students are asked to create graphic organizers that show their understanding of cultural adaptations through a chosen work of art and then show the connections of systems that have influenced the outcomes of an individual in the artwork. These visuals will allow teachers the ability to assess students' understanding of cultural features that influence an established society and their ability to predict how systems have created an individual's outcome. (An example of two diverse methods of organization to show that Wally and Peebles are most likely to be litter mates from lesson two is shown below.)



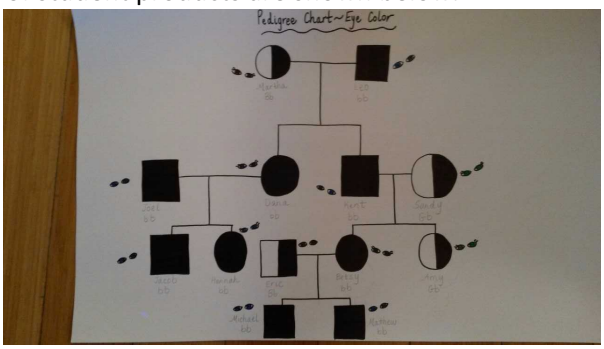


Another formative assessment utilized in this unit is a class ancestry tree. Although not required, a tree that features leaves of student names provides both an appropriate ancestry symbol and a place for students to easily place short statements of learning. In the unit, the tree was used for students to quickly place a response to a teacher-designed question, such as what was learned that day, a goal of learning for the next class or the summary slogan for what systems have mainly influenced the outcome of their personhood. Being able to quickly read student responses provides the teacher with an easy way to see what knowledge was gained and how students are feeling about the lesson topics.

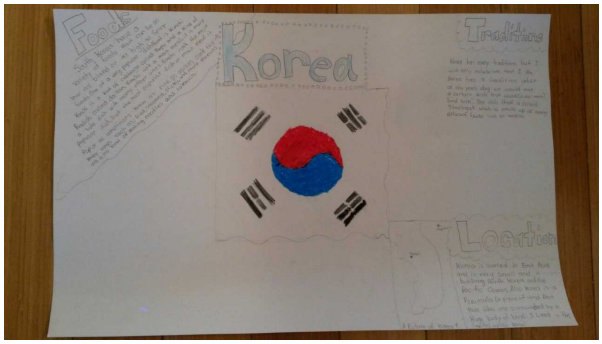
Summative

The final lesson in the unit provides students with a summative performance task, culminating their learning about themselves and effective communication skills through a real-world product. Students must combine all of the aspects of ancestry they have explored throughout the unit to highlight important personal features for an audience that will view them in the distant future. Because students have freedom to format their profile in a way in which they choose, this will serve as an appropriate assessment of whether they have understood all the systems that are included in influencing a person. The profile should demonstrate an understanding of the system of genetics by including physical aspects and predicting possible diseases, the system of culture by including traditions and possible careers, and the system of environment by including interests, hobbies and friend groups. While there are many other profile aspects that can reveal an understanding of the influence of systems, the profile rubric will provide the clearest picture of students' grasp of the essential understanding. A key piece of an effective profile as well is the creation of a reflective slogan. Students must create a statement that summarizes the unit understanding of how systems influence outcomes in their own personal lives, highlighting what factors may have been the most influential. Students' choice of format, whether a poster, presentation or digital document allows for creativity and conversations about effective communication for a target audience. (See lesson plan details and template in lesson four.)

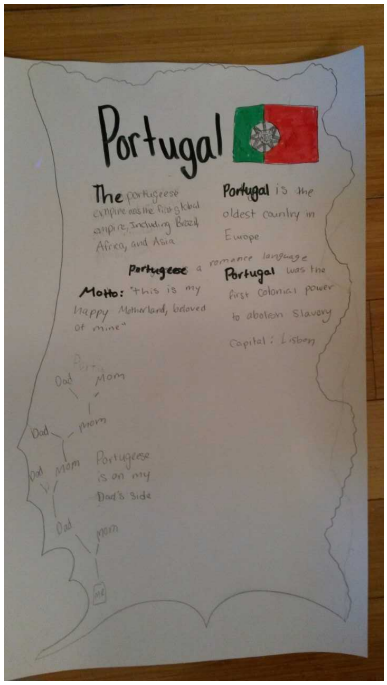
The choice board described also provides a method of assessment for students that is geared towards a more differentiated approach. Students are assessed through the choice board by their own interest area in the field of ancestry. While each block of the choice board does not come with its own exclusive rubric, the variety of products included allow students to be assessed on their prior knowledge and learning through the lessons in a chosen category, such as ancestry writing, science exploration or cultural research. Examples of student products are shown below.



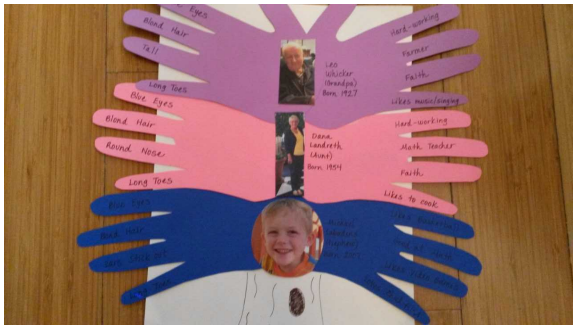
Student explored the eye colors of family members using a pedigree chart after viewing an instructional video.



Student created an original poster about Korea because of his ancestral roots and family traditions.



Student learned that her family origins were partially rooted in Portugal and desired to learn more. She created a poster that features aspects of interest and family connections.



Student created a “Handy Tree” using provided template to explore three generations and common characteristics.

IV. Lesson Plans

TEACHER NAME			Lesson #
Amy Whicker			1
MODEL	**CONTENT AREA**	**GRADE LEVEL**	
Taba Concept Development	Science	7th	

CONCEPTUAL LENS	LESSON TOPIC
"Systems"	Heredity and Inheritance

LEARNING OBJECTIVES *(from State/Local Curriculum)*

7.L.2.2 Infer patterns of heredity using information from Punnett squares and pedigree analysis.
7.L.2.3 Explain the impact of the environment and lifestyle choices on biological inheritance (to include common genetic diseases) and survival.

THE ESSENTIAL UNDERSTANDING *(What is the overarching idea students will understand as a result of this lesson?*	THE ESSENTIAL QUESTION *(What question will be asked to lead students to "uncover" the Essential Understanding)*
"Systems influence outcomes."	How do systems influence outcomes?

CONTENT KNOWLEDGE (What factual information will students learn in this lesson?)	PROCESS SKILLS (What will students be able to do as a result of this lesson?)
*Heredity describes the passing of physical or mental characteristics from one generation to the next. *The outcome of a person's composition can be influenced by various systems, including heredity, genetic probability, and lifestyle decisions. *These systems can work independently and interdependently to influence these outcomes. *The likelihood of someone having a trait can be calculated using probability models, Punnett squares, and pedigree analysis (introductory ideas only).	Students will be able to…. *analyze the effects of heredity, lifestyle, and environment on a person's composition *categorize human characteristics in multiple ways, exploring factors such as visibility, changeability, and environmental influences. *describe and use probability models to predict the likelihood of a person having a characteristic (introductory) *Support ideas using categorical reasoning *Work collaboratively as a group or partnership

GUIDING QUESTIONS

What questions will be asked to support instruction?
Include both "lesson plan level" questions as well as questions designed to guide students to the essential understanding

Pre-Lesson Questions:	During Lesson Questions:	Post Lesson Questions:
• (Icebreaker) How did you decide whether each block was a trait or a tradition? Who did you meet that shares a trait or tradition with you? • What other traits or traditions do we use to describe people? What other categories could be used? • What is heredity? How does it connect to our icebreaker activity? • What are factors that influence heredity? • How can a trait be "changed" or "transformed"? • How can we use numbers to describe the chances of having a trait? (i.e. Is it a 50/50 chance that someone will be right or left-handed?) • How does a person's environment affect the outcome?	• What human characteristics did you observe? (from videos) • What are other characteristics you know about from your own experiences? • How can you group these characteristics together? • Why did you group the traits this way? • What are the differences between the traits we can see and the ones we cannot? What are the differences between the traits that can be changed and the ones that cannot? What is the cause of this difference? • What environmental systems affect a person's characteristics?	• What is the relationship between heredity and a person's characteristics? • What other systems affect characteristics? How can you group these systems? • Does one system affect the outcome more than another system? Can you think of an example that illustrates your idea? • Can you think of an example of a characteristic that is affected by two systems? Three or more systems? • What can you say about how all these systems influence a person? • How can we use numbers to describe the chances or someone having a characteristic? Can you think of an example that is truly a 50/50 chance? Can you think of an example that cannot be "calculated"? • How do systems influence outcomes?

DIFFERENTIATION

(Describe how the planned learning experience has been modified to meet the needs of gifted learners. Note: Modifications may be in one or more of the areas below. Only provide details for the area(s) that have been differentiated for this lesson.

Content	Process	Product	Learning Environment
The combination of math and science content provides a challenge to describe reasoning in multiple disciplines. Because heredity often involves the probability of having a trait, students will need to use math reasoning to justify their responses. In addition, the rich discussion of environmental factors (societal, cultural) incorporates social issues and prior experiences.	**Students will engage in complex thinking by grouping, subsuming, and regrouping. They will be required to justify their groups through oral discussion.**	**Students will be able to choose several small tasks from a choice board that combine various aspects of heredity and ancestry with varying products (interviews, posters, written responses, family trees, etc.).**	

PLANNED LEARNING EXPERIENCES

(What will the teacher input? What will the students be asked to do? For clarity, please provide detailed instructions)

Hook/Icebreaker:
Engage students in the topic of ancestry exploration by discussing the "hype" behind the current interest in origins, such as "Ancestry.com" and "23 and Me". Show students a video from an episode of Inside Edition about triplets that used these programs to explore their ancestry. Use the video as a platform to introduce the idea of traits, origins, and ancestry.
https://www.youtube.com/watch?v=qyfWZZ7uPuE

Provide students with the "traits versus tradition" cards accessed at: http://teach.genetics.utah.edu/content/heredity/files/Family-Traits-Traditions.pdf (Use a double-sided sheet with the characteristics.) Have students walk around the room and find others that have a particular trait or tradition. Students will have each other sign the block on a peer's sheet that represents them. As they sign, the pair of students should also decide whether they believe the aspect is a trait or a tradition. Give students 10-15 minutes to fill in their sheet with as many signatures and checks as possible. Once students have had sufficient time to gather signatures, ask each student to share one person they met for the first time and what trait or tradition block the student signed. (Use "Pre-Lesson Questions" as time allows.)

Engage and Connect
Continue by showing students "Discovery Education: Heredity" video to engage their thinking about human characteristics and provide content knowledge. Display the following questions on the board to guide students in what to listen and look for as they watch. Following the video, engage in an oral discussion while recording students' ideas on the board using these question stems. (Note that the video also includes pre and post questions that can be used if time allows.)

- What is heredity?
- What traits do you have that are similar to those in your family?
- What traits do you share with your family members that are visible? What traits do you share that are not visible?
- What traits do you have that are not present in your family members? Why do you think that is?
- How can you use numbers to describe the likelihood of having a particular trait?

Video Link (Requires teacher log-in):
https://app.discoveryeducation.com/learn/videos/93cd24b0-4b07-4ee1-b728-fb8d74c95307?hasLocalHost=false

Explore
Listing

1. The teacher will refer back to the cards that students signed during the Icebreaker activity as well as the videos.
    a. Ask students to think deeply about:
        i. What characteristics or traits do you think need to be explored in our investigation this week?
        ii. What other categories besides traits and traditions may be needed?
        iii. What systems affect whether a person has a trait?
2. Provide students with the sorting template (attached) and ask them to list all the characteristics that could be used to describe a person. (Ensure that students understand to include more than simply physical traits based on prior discussion cards and videos.)
3. Students will share lists while the teacher makes a comprehensive list on the board. (Sample List below)

List	Group and Label	Subsume	Regroup and Label
Eye color	Physical trait	Physical trait	Heredity System Influence
Skin color	Eye color	Facial	Eye color
Hair color	Skin color	Features	Skin color
Height	Hair color	Skin	Hair color
Weight	Height	Body	Height
Introvert/Extrovert	Weight		Weight
Foot size	Foot size	Internal trait	Disorders
Interests	Hair type	(Personality)	Cancer Risk
Hair type	Body type		
Cancer Risk	Nose size/shape	(Preferences)	Culture/Heritage Systems Influence
Voice	Ear/earlobes		Athleticism
Body type	Face shape		Introvert/extrovert
Nose size/shape	Lips		Music ability
Academic	Freckles/moles		Disease susceptibility
preferences	Gender		Beliefs
Ears/Earlobes			
Disorders	Personality		Environment/Societal Systems
Habits	Introvert/extrovert		Influence
Athleticism	Interests		Weight
Beliefs	Habits		Athleticsm
Face shape	Optimistic/pessimistic		Introvert/extrovert
Music ability			Habits
Lips	Internal trait		Academic preferences
Freckles/moles	Cancer risk		Beliefs
Disease	Voice		Disorders
susceptibility	Disorders		
Gender	Disease susceptibility		Probability System Influence
Intelligence	Intelligence		Gender
Priorities			Ears/Earlobes
	Preferences		Cancer Risk
	Athleticism		Eye color
	Music ability		Hair color

	Academic strengths Beliefs Priorities		

Explain
Grouping and Labeling

1. Students will use the comprehensive list on the board to group characteristics into categories using the following guidelines: at least four different groups, at least three items in each, and no item can be used twice.
    a. To encourage a hands-on approach, have students choose at least 20 items from the class list to write on post-it notes. Use sticky dry-erase posters on the wall to record categories and create columns. The post-it notes will be "movable" between categories to encourage students to be willing to move items and be open-minded with group members or partner.
2. The teacher will move throughout the classroom and facilitate students' discussions. (See question stems in "During Lesson".) Students will be asked to provide reasoning about their groups and asked to label each group to encourage generalization. (See sample of possible groupings) Based on student "readiness", the teacher will guide students towards thinking about what systems influence whether a person has a particular trait. Based on time, the teacher will ask each group to share their categories and items placed in each.

Elaborate
Subsuming, Regrouping, Renaming

1. Students will be challenged to regroup items using the new categories and following guidelines: items can be used more than once, categories must be new, and each category must contain at least four items. The teacher will remind students to think of what systems influence whether a person has a trait. Because the guidelines allow for items to be placed in multiple categories, students should begin to see that traits are affected by multiple systems. (The dry-erase posters and post-it notes will allow categories and items to be changed easily. Students may use three categories in this phase, if needed. Post-it notes could be placed between category lines to show that they could fit into more than one.)
2. The teacher will ask all groups to share categories and reasoning with the class.

Evaluate

1. The teacher will conclude the lesson by asking students to describe the overarching "systems" that influence if a person has a characteristic or not.
2. The teacher will ask students to answer the following questions in paragraph form in their journals:
    a. What influences the outcome of a person's characteristics? Provide examples to demonstrate your understanding. (Example: The likelihood of a person having diabetes is influenced by….)
    b. Describe a characteristic you have that is influenced by more than one system. Describe if one system influences that characteristic more than the other and how you know.
    c. Design a "dream" project of interest for our next lesson. (Would you like to investigate a trait you have and where it comes from? Would you like to research a country that your ancestors came from? Would you like to explore probability models to see the likelihood of your children having your traits?) (Note: This will lead us into talking about the choice board and guide students in what choice(s) will be most interesting for them.)

Students will be exposed to a project choice board to begin thinking about what they are interested in exploring for their independent project for the week. The teacher will explain each block as time allows and ask students to indicate their top 3 interest choices.

Design an interview for an older relative or ancestor. Create at least 15 questions that would help you gain knowledge about the unique physical characteristics, personality traits, or cultural traditions of your family. If you can, conduct and record the interview on video. (If you can't conduct the interview, predict answers using research.)	With your parents' permission, gain free information about your relatives through http://www.findmypast.com/ or http://libertyellisfoundation.org/passenger Write a Before/During/After Journal Entry to chronicle your search. Example Questions: What do you expect to find? What information did you uncover about your relatives? How did you feel as you were searching? Why is this information important to you as an individual or to your family?	View this clip from the show "Who Do You Think You Are? https://www.youtube.com/watch?v=CBegsEzKvsI Imagine that you are going to be a guest on the next episode. Draw a comic real of what you will experience. Include dialogue and scenes from the places you think you might visit based on your research and personal experience.

Explore Dog Breeding through this interactive game. Make sure you play both levels. https://pbskids.org/dragonflytv/games/game_dogbreeding.html Write a paragraph summarizing what the game taught you about how the system of heredity determines the outcome of the offspring.	Learn about creating Punnett Squares using this video and investigation. https://www.youtube.com/watch?v=Y1PCwxUDTl8 Create a Punnett Square representing a trait in your family using your parents' traits. How did the system of heredity influence your outcome? What other systems might have affected the outcome? Present your findings using a poster or a video whiteboard.	Watch this video to learn about Pedigree Charts. https://www.youtube.com/watch?v=Wuk0W10EveU Create a poster-size pedigree chart, following a recessive trait in your family. Remember to use your logic to figure out your parents and grandparents' shapes and shading. Be ready to present your findings!
Think about the investigation we did to find the two cats who were related. Create a "game" of cards using any animal of your choosing. List at least 5 characteristics for each animal. Create an answer key describing which two animals are siblings and how you might guide your fellow students to discover it. (Make sure your answer isn't too easy!)	Create a family "Handy Tree" using the link below. http://teach.genetics.utah.edu/content/heredity/files/Family-Handy-Tree.pdf Make 3 sets of hands as shown in the example. Complete one set of hands for yourself, one set for a parent, and one set for a grandparent or older relative.	Choose a country that is a part of your ancestry. Create a "magic carpet" that features systems that interest you. Make connections between you, your family, and your country for each system. Suggestions are: *Culture/Traditions *Education/Priorities *Food *Physical Traits *Health/Disease

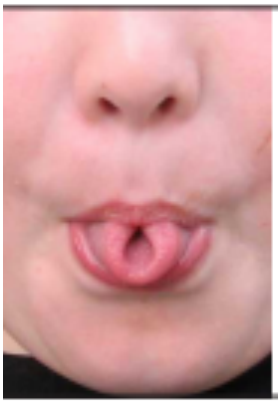
Handouts for Lesson #1:

I have attached earlobes

Trait ☐ Tradition ☐

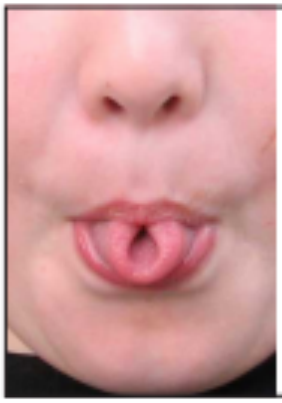
I have pierced ears

Trait ☐ Tradition ☐



I can roll my tongue

Trait ☐ Tradition ☐



I like to eat spicy foods

Trait ☐ Tradition ☐

I have dimples

Trait ☐ Tradition ☐

I greet others with a smile

Trait ☐ Tradition ☐

My natural hair color is brown

Trait ☐ Tradition ☐

I use dye to change my hair color

Trait ☐ Tradition ☐

I am left-handed

Trait ☐ Tradition ☐

I use my hand to catch a ball

Trait ☐ Tradition ☐

I am color-blind

Trait ☐ Tradition ☐

I like to create art

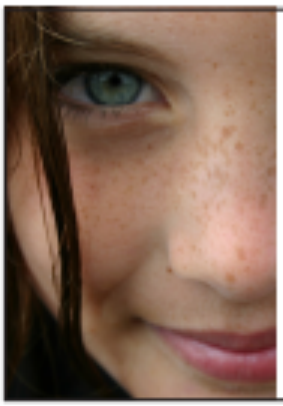
Trait ☐ Tradition ☐

I have allergies

Trait ☐ Tradition ☐

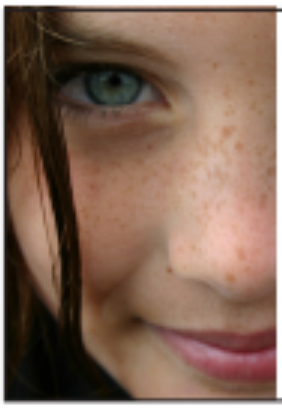
I care for a pet

Trait ☐ Tradition ☐



I have freckles

Trait ☐ Tradition ☐



I lay in the sun to get a tan

Trait ☐ Tradition ☐

List	Group and Label	Subsume	Regroup and Label
Eye color	Physical trait	Physical trait	Heredity System Influence
Skin color	Eye color	Facial Features	Eye color
Hair color	Skin color	Skin	Skin color
Height	Hair color	Body	Hair color
Weight	Height		Height
Introvert/Extrovert	Weight	Internal trait	Weight
Foot size	Foot size	(Personality)	Disorders
Interests	Hair type	(Preferences)	Cancer Risk
Hair type	Body type		
Cancer Risk	Nose size/shape		Culture/Heritage Systems Influence
Voice	Ear/earlobes		Athleticism
Body type	Face shape		Introvert/extrovert
Nose size/shape	Lips		Music ability
Academic preferences	Freckles/moles		Disease susceptibility
Ears/Earlobes	Gender		Beliefs
Disorders			
Habits	Personality		Environment/Societal Systems
Athleticism	Introvert/extrovert		Influence
Beliefs	Interests		Weight
Face shape	Habits		Athleticsm
Music ability	Optimistic/pessimistic		Introvert/extrovert
Lips			Habits
Freckles/moles	Internal trait		Academic preferences
Disease susceptibility	Cancer risk		Beliefs
Gender	Voice		Disorders
Intelligence	Disorders		
Priorities	Disease susceptibility		Probability System Influence
	Intelligence		Gender
			Ears/Earlobes
	Preferences		Cancer Risk
	Athleticism		Eye color
	Music ability		Hair color
	Academic strengths		
	Beliefs		
	Priorities		

List	Group and Label	Subsume	Regroup and Label

Choice Board Activity

Unit/Theme: Ancestry Dot What?!

Research, Imagine & Write	Design an interview for an older relative or ancestor. Create at least 15 questions that would help you gain knowledge about the unique physical characteristics, personality traits, or cultural traditions of your family. If you can, conduct and record the interview on video. (If you can't conduct the interview, predict answers using research.)	With your parents' permission, gain free information about your relatives through http://www.findmypast.com/ or http://libertyellisfoundation.org/passenger Write a Before/During/After Journal Entry to chronicle your search. Example Questions: What do you expect to find? What information did you uncover about your relatives? How did you feel as you were searching? Why is this information important to you as an individual or to your family?	View this clip from the show "Who Do You Think You Are? https://www.youtube.com/watch?v=CBegsEzKvsI Imagine that you are going to be a guest on the next episode. Draw a comic real of what you will experience. Include dialogue and scenes from the places you think you might visit based on your research and personal experience.
Science Exploration & Creation	Explore Dog Breeding through this interactive game. Make sure you play both levels. https://pbskids.org/dragonflytv/games/game_dogbreeding.html Write a paragraph summarizing what the game taught you about how the system of heredity determines the outcome of the offspring.	Learn about creating Punnett Squares using this video and investigation. https://www.youtube.com/watch?v=Y1PCwxUDTl8 Create a Punnett Square representing a trait in your family using your parents' traits. How did the system of heredity influence your outcome? What other systems might have affected the outcome? Present your findings using a poster or a video whiteboard.	Watch this video to learn about Pedigree Charts. https://www.youtube.com/watch?v=Wuk0W10EveU Create a poster-size pedigree chart, following a recessive trait in your family. Remember to use your logic to figure out your parents and grandparents' shapes and shading. Be ready to present your findings!
Ancestry Create & Decorate	Think about the investigation we did to find the two cats who were related. Create a "game" of cards using any animal of your choosing. List at least 5 characteristics for each animal. Create an answer key describing which two animals are siblings and how you might guide your fellow students to discover it. (Make sure your answer isn't too easy!)	Create a family "Handy Tree" using the link below. http://teach.genetics.utah.edu/content/heredity/files/Family-Handy-Tree.pdf Make 3 sets of hands as shown in the example. Complete one set of hands for yourself, one set for a parent, and one set for a grandparent or older relative.	Choose a country that is a part of your ancestry. Create a "magic carpet" that features systems that interest you. Make connections between you, your family, and your country for each system. Suggestions are: *Culture/Traditions *Education/Priorities *Food *Physical Traits *Health/Disease

TEACHER NAME	Lesson #
Amy Whicker	2

MODEL	CONTENT AREA	GRADE LEVEL
Bruner's Structure of the Intellect	Science & Mathematics	7th grade

CONCEPTUAL LENS	LESSON TOPIC
Systems	Data Collection and Population Analysis

LEARNING OBJECTIVES *(from State/Local Curriculum)*

Math:

7.SP.A.2 Use data from a random sample to draw inferences about a population with an unknown characteristic of interest.

7.SP.B.3 Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities.

Science:

7.L.2.2 Infer patterns of heredity using information from Punnett squares and pedigree analysis.

THE ESSENTIAL UNDERSTANDING *(What is the overarching idea students will understand as a result of this lesson?*	THE ESSENTIAL QUESTION *(What question will be asked to lead students to "uncover" the Essential Understanding)*
Systems influence outcomes.	***How do systems influence outcomes?***

CONTENT KNOWLEDGE (What factual information will students learn in this lesson?)	PROCESS SKILLS (What will students be able to do as a result of this lesson?)
• Data analysts collect and analyze data in an organized, systematic way. • Comparing data using logical reasoning and measures of center and variation can reveal relationships and overlaps. • An organism's phenotype is the physical characteristics that can be seen. • The outcome of an organism's phenotype is influenced by the systems of heredity, genetics/genotype, parent characteristics and environment. • The phenotypes of siblings can be similar to each other based on patterns of heredity and genetic factors. There can also be differences between siblings depending on dominant/recessive traits. • Data analysts utilize methods of organization to determine what data is essential for their purpose.	• Students will be able to synthesize their knowledge about characteristics of data analysts. (This will be incorporated at the beginning of the lesson based on prior knowledge and after the lesson based on what is learned.) • Students will be able to collect meaningful data to answer an essential question about the relationships between members of an animal population. • Students will be able to cipher through data collected to extract the most meaningful pieces in order to determine data overlap and relationships. • Students will be able to analyze phenotypes to determine which two cats are most likely to be litter mates, explaining their process of determining similarities and differences. • Students will be able to connect the importance of organization by data analysts to reach conclusions, explaining the different methods of organization and their benefits/limitations. • Students will be able to connect the overarching systems that influence the outcome of an organism's phenotype or physical appearance, exploring whether one system has a greater or lesser effect depending on the trait.

GUIDING QUESTIONS

What questions will be asked to support instruction?
Include both "lesson plan level" questions as well as questions designed to guide students to the essential understanding

Pre-Lesson Questions:	During Lesson Questions:	Post Lesson Questions:
• What do data analysts do? • What types of methods do they use to analyze data? • What are ways to organize data? • What are ways to effectively utilize technology in organizing data? • What do you think analysts did before computers were used? • How do know what data is important? • Is it possible to collect data that is not useful? How do you know? • What are some of the skills of data analysts you observed in the video? • What diversity did you observe from the data analysts in the video? How did each of them play a role in the success of the company? • In connecting to yesterday's lesson, how do you think data analysts use systems to determine outcomes?	• What characteristics of Wally and the other cats do you think will be important? • How will you organize the information with your materials (computer and paper)? • Why do you think these phenotypes displayed on the card will be important to determine a litter mate? • Will the litter mates need to be identical? Why or why not? • Why is it possible for the phenotypes of litter mates to be different? • What characteristics will not be necessary or too confusing to use to determine litter mates? • What are some areas where you are observing data overlaps? What could these overlaps indicate? • Have you made any adjustments in your organization as you have explored the population? • What "systems" do you think influence the outcome of each kitten's phenotype? • How could you use these "systems" to determine which kittens are litter mates? • How does the system of genetics influence the outcome?	• What two cats do you believe are litter mates? What is your reasoning and evidence? • What was the process that you and your partner used to determine who were litter mates? How did you analyze the data? • What organization method(s) were most helpful in determining who were litter mates? • How does the way you organized your data reveal or not reveal the relationship between the cats? • Is there another organization method or program that you think would be helpful to design? • How do you think a professional data analyst would organize and analyze the data? • Are there any other characteristics of data analysts that we can add to our original list? • How do the "systems" explored today and in our previous lesson influence the outcome of the litter's phenotypes? Can you see other applications of how systems influence outcomes in the world of data analysis?

DIFFERENTIATION

(Describe how the planned learning experience has been modified to meet the needs of gifted learners. Note: Modifications may be in one or more of the areas below. Only provide details for the area(s) that have been differentiated for this lesson.

Content	Process	Product	Learning Environment
	For groups that may be ready for an extra challenge, the teacher may choose to not provide the first cat card, "Wally". Instead, the teacher could provide all of the cat cards to the students and ask them to find the two litter mates. This will cause them to have to cipher through all of the data to find two litter mates, possibly grouping them by age first and using phenotype analysis to eliminate groups. This would present a greater challenge by not having a "starter card".	**Partners have the freedom to choose what organizational "product" they will use to determine the litter mates. This could be an Excel spreadsheet, a chart on paper, or a flow chart in Word. The teacher may provide some guidance to groups who are not organized or moving towards a reasonable solution. However, the organizational choices of each group will lead to rich discussion about what methods are most effective as real-life data analysts.**	

PLANNED LEARNING EXPERIENCES

(What will the teacher input? What will the students be asked to do? For clarity, please provide detailed instructions)

Engage and Connect - *This phase focuses on piquing students' interest and helping them access prior knowledge. This is the introduction to the lesson that motivates or hooks the students.*

(Optional Idea): To engage students in what will be explored today, place a stuffed animal or an animal portrait on each desk. Ask students to think about how they would analyze their animal and how a data analyst may look at their animal. The teacher may use this to introduce the idea of finding litter mates if pictures/stuffed animals are all the same animal, like cats or dogs. If time allows, students may be allowed to circulate to find a cat or dog that is similar to their own and explain how they determined this similarity through the eyes of a data analyst.

The teacher will engage students in exploring the discipline of data analysis through the Pre-lesson questions listed above. To begin, the teacher will begin with asking,

- Why do we keep and analyze data?
- What is data analysis?
- What do data analysts do? Where might they work?
- What is the importance of data in our world?

The teacher (or a student recorder) will record the contributions of students on the board for later review and additions. (If students seem to be unable to contribute meaningful responses, the teacher may allow students to view the video earlier than planned.)

Engage students in the work of data analysts by viewing the video "Analyzing and Interpreting Data". Ask students to record notes on what they observe people doing in the video that relates to data analysis.
https://www.youtube.com/watch?v=xbTqJiZ8nhA

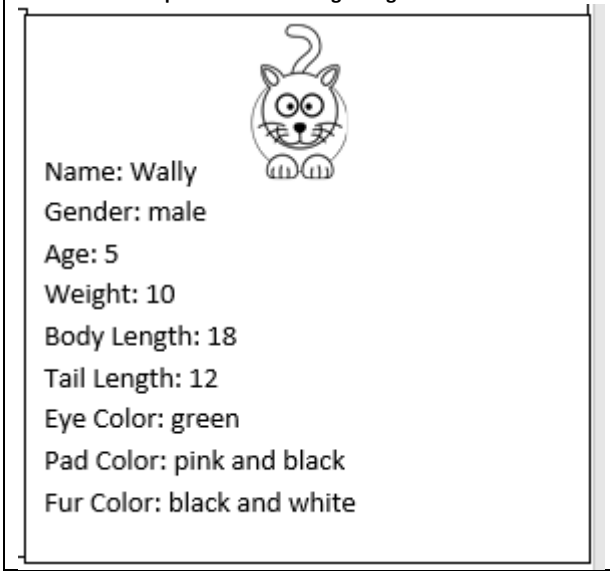
After viewing the video, the teacher will ask the class what could be added to the list of what data analysts do. The following questions could be used to expound on the video prior to the investigation, in addition to any other questions in the Pre-lesson question section above:

- Why do you think someone may want to be a data analyst for their career?
- What are some places they may work? What might they do at these places?
- Do you think that some people think of data analysis as only for "math" and "science" people? Do you agree with this stigma? Why or why not?
- What type of organization is important in data analysis? Is the type of organization dependent on what is being studied?

To transition to the cat investigation, the teacher will show a video of a litter of kittens that demonstrate differences in phenotypes.
https://www.youtube.com/watch?v=4E9xHI2rlKU
The teacher will engage students to discuss why not all the kittens in the video looked identical, referring back to previous lessons on how genotypes affect phenotypes. The teacher will then introduce the purpose of the lesson to connect organizational skills with data analysis to determine which two kittens from a population are litter mates.

Explore - *In this phase, the students have experiences with the concepts and ideas of the lesson. Students are encouraged to work together without direct instruction from the teacher. The teacher acts as a facilitator. Students observe, question, and investigate the concepts to develop fundamental awareness of the nature of the materials and ideas.*

Students will be provided with a beginning data card for the cat "Wally" (seen below).



Students will receive instructions about practicing being a data analyst for a population of cats. They will be collecting and analyzing data on a population of cats to determine who might be a "litter mate" with Wally. Students will be provided with blank paper and a Chromebook to be used with a partner. The teacher will allow partners to decide how they might collect the data by viewing the information through a gallery walk or in printed out cards (depending on time and classroom layout). Once students have had time to collaborate on strategies, the teacher will lead students in a discussion before they begin to investigate.

- As you collect data on the other cats, how will you organize the information?
- Do you think you need to record all characteristics?
- What computer programs may be helpful? (i.e. What categories could you use in Excel for a spreadsheet?)
- What type of graphic/chart could you create on paper?
- How will the organization of your computer and written graphics help you determine this relationship?

The students will experience the data collection process through a gallery walk. The other cat data (see attached cards) will be displayed around the room. The students will take paper and Chromebook to collect data on the cats by completing charts and spreadsheets designed by them. They will decide what information is most important and if some characteristics are not needed. The teacher will act as facilitator without giving them direct strategies or answers. (If the room is small or not conducive to a gallery walk, the teacher may print the cards and provide a set to each partner group.)

An example of how students could organize the data in their Chromebook using an Excel spreadsheet is shown below. (Notice that the cats that are the same age as Wally are highlighted. Students should begin with focusing on eliminating cats based on age. If the students seem to be focusing on the wrong characteristics early on, the teacher may provide some whole-group guidance.)

Name	Age	Weight	Body Length	Tail Length	Eye Color	Pad Color	Fur Color
Tomodachi Joto	1	7	14	1.5	Yellow	Pink	White/Red
Misty	1	9	18	11	Green	Pink/Black	Gray/White/Black
Augustus	2	10	21	11	Yellow/Green/Blue	Pink/Black	Black/White
Pepper	2	12	17	9	Yellow	Pink	Orange
Harmony	3	12	24	11	Yellow	Black	Black
Gray Kitty	3	9	15	9	Green	Gray	Gray
Cleopatra	4	7	18	9	Yellow	Pink	Black/White
Tigger	4	8	17	10	Yellow	Brown	Orange/Black/White
Diva	4	11	20	12	Green	Pink	Gray/Black/Brown Stripes/White Patches
Lady Jane Grey	4	9	19	11	Yellow	Gray	Gray
Peebles	5	9	17	11	Green	Black	Gray
K.C.	5	16	24	12	Yellow	Black	Brown/Black Stripes/White
Oddfuzz	5	18	21	9	Yellow	Pink	Orange/White
Wally	5	10	18	12	Green	Pink/Black	Black/White
Ravena	6	14	23	12	Yellow	Pink/Black	Orange/Black/Gold/White
Weary	8	15	17	12	Green	Pink	Black/White
Melissa	8	11	21	11	Yellow	Pink	White/Black/Orange
Lady	10	9	17	13	Yellow	Black	Gray/Brown/White Stripes
Charcoal	11	12	21	13	Yellow	Black	Black/White
George	12	15	21	13	Green	Black	Black/White
Mittens	14	11	17	11	Yellow	Pink	Orange/White
Peau de Soie	15	7	16	13	Green	Pink	Orange/Black/White
Strawberry	16	15	21	10	Green	Black	Gray/Brown/White Stripes
Alexander	18	11	21	11	Green	Black	Brown/Black Stripes/White

Explain - *Students communicate what they have learned so far and figure out what it means. This phase also provides an opportunity for teachers to directly introduce a concept, process, or skill to guide students toward a deeper understanding.*

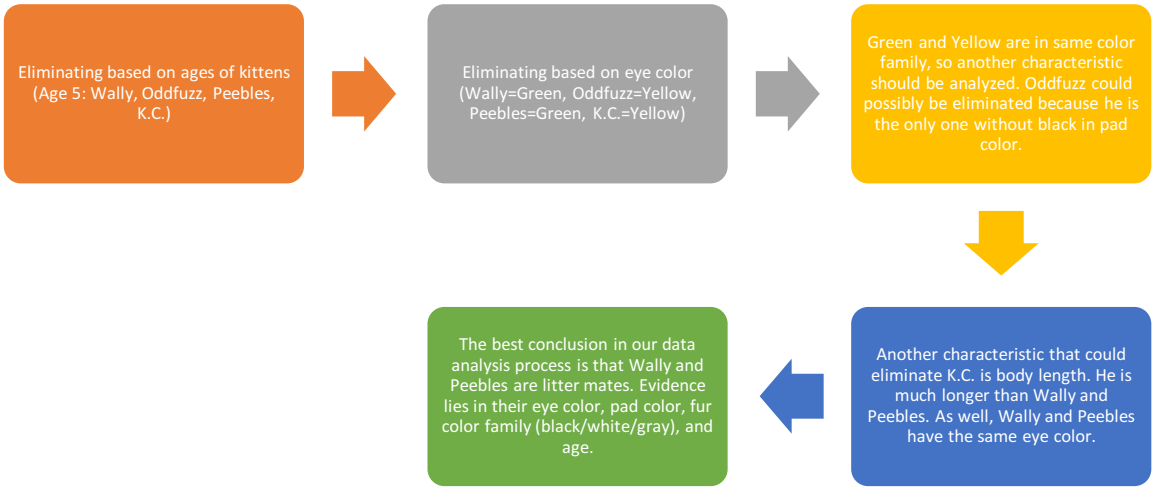
As students explore the cat data cards, the teacher will act as facilitator of partner discussions. If students are needing direction, the teacher may use the following directions/hints to get students closer to a correct solution.

- If students are not focusing on age of the litter mates first, the teacher may direct students by asking, "What characteristic is essential for two kittens to be litter mates? Can you eliminate some of the cats based on this?"
- If students have all of the cats that are age 5, but are not sure where to go from there, the teacher could direct them to focus on particular characteristics that would prompt them to think about color families (i.e. blue/green eyes could be placed together).
- If students are not organizing the data in any way, the teacher may suggest an Excel spreadsheet with categories of importance or a chart that groups the kittens by characteristics. Once they find all the kittens of age 5, what further organization is needed?
- If students are overly focused on characteristics that might not allow for elimination or small differences between body or tail length, the teacher may ask students about the characteristics that would be most important to determine relationships.

Depending on student progress, the teacher may ask students to share discoveries made so far, focusing on using the correct vocabulary of phenotypes and genotypes. Discussion of characteristics that could be different between siblings based on genetic factors may also be incorporated into the discussion. To connect to yesterday's lesson, the teacher will direct students to discuss systems that the analysis demonstrates. Students should be seeing that the system of genetics is the primary influence in determining the phenotypes with the cats. The system of genetics can be also be influenced by dominant and recessive traits.

Elaborate —*Allow students to use their new knowledge and continue to explore its implications. At this stage students expand on the concepts they have learned, make connections to other related concepts, and apply their understandings to the world around them in new ways*

The teacher will ask students to present which two kittens they believe are litter mates to their classmates, providing evidence through their organizational charts and diagrams. Depending on students' explanations and conclusions, the teacher will determine the direction of the discussion and when to reveal the answer. The two kittens that are most likely to be litter mates are Wally and Peebles. Students who may lack the organization skills needed to reach this conclusion may benefit from seeing an example of a flow chart, such as the one shown below. Depending on time, the teacher could ask each partner group to create their own flow chart that shows concretely how they reached their conclusion by a series of data analysis steps and elimination.



Evaluate: *This phase assesses both learning and teaching and can use a wide variety of informal and formal assessment strategies.*

The teacher will ask the class to come back to their original list of what data analysts do. Characteristics could be added or modified based on the experience of being a data analyst of the cat population.

The teacher will display the following questions on the display board for students to answer on an exit ticket/index card.

- In your own words, what do data analysts do?
- How important is organization to a data analyst?
- What would you change about how you determined the litter mates in our investigation? Would you change how you organized the data? What characteristics you focused on?
- Thinking about the systems we explored yesterday that affect how a person looks (heredity, genetics, environment), what can we conclude about how systems influence outcomes from our investigation today?
- What type of investigation would you design to explore how different systems influence a person's phenotype? How would your approach change between investigating people instead of animals? Do you think we could look at profile "cards" for people to analyze who are brother and sister? (Challenge students to create a card set for another set of animals or people as one of their choice board activities.)

Extension – Based on time, students will be provided with time to continue their choice board projects begun yesterday. Students may want to create a card set for animals or people as one of their activities or explore the dog breeding computer game. (See Choice Board from Lesson 1.)

Name: Tomodachi Joto
Gender: male
Age: 1
Weight: 7
Body Length: 14
Tail Length: 1.5
Eye Color: yellow
Pad Color: pink
Fur Color: white and red

Name: Gray Kitty
Gender: female
Age: 3
Weight: 9
Body Length: 15
Tail Length: 9
Eye Color: green
Pad Color: gray
Fur Color: gray

Name: Oddfuzz
Gender: male
Age: 5
Weight: 18
Body Length: 21
Tail Length: 9
Eye Color: yellow
Pad Color: pink
Fur Color: orange and white

Name: Lady Jane Grey
Gender: female
Age: 4
Weight: 9
Body Length: 19
Tail Length: 11
Eye Color: yellow
Pad Color: gray
Fur Color: gray

Name: Misty
Gender: male
Age: 1
Weight: 9
Body Length: 18
Tail Length: 11
Eye Color: green
Pad Color: pink and black
Fur Color: gray, white, and black

Name: Alexander
Gender: male
Age: 18
Weight: 11
Body Length: 21
Tail Length: 11
Eye Color: green
Pad Color: black
Fur Color: brown and black stripes, some white

Name: Melissa
Gender: female
Age: 8
Weight: 11
Body Length: 21
Tail Length: 11
Eye Color: yellow
Pad Color: pink
Fur Color: white, black, and orange

Name: Ravena
Gender: female
Age: 6
Weight: 14
Body Length: 23
Tail Length: 12
Eye Color: yellow
Pad Color: pink and black
Fur Color: orange, black, gold, and white

Name: Wally
Gender: male
Age: 5
Weight: 10
Body Length: 18
Tail Length: 12
Eye Color: green
Pad Color: pink and black
Fur Color: black and white

Name: Pepper
Gender: male
Age: 2
Weight: 12
Body Length: 17
Tail Length: 9
Eye Color: yellow
Pad Color: pink
Fur Color: orange

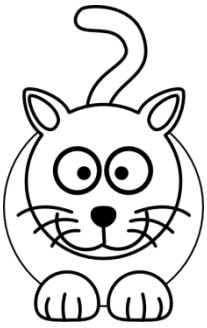
Name: Strawberry
Gender: female
Age: 16
Weight: 15
Body Length: 21
Tail Length: 10
Eye Color: green
Pad Color: black
Fur Color: gray, brown, and white stripes

Name: Tigger
Gender: female
Age: 4
Weight: 8
Body Length: 17
Tail Length: 10
Eye Color: yellow
Pad Color: brown
Fur Color: orange, black, and white

Name: Peebles
Gender: female
Age: 5
Weight: 9
Body Length: 17
Tail Length: 11
Eye Color: green
Pad Color: black
Fur Color: gray

Name: Mittens
Gender: female
Age: 14
Weight: 11
Body Length: 17
Tail Length: 11
Eye Color: yellow
Pad Color: pink
Fur Color: orange and white

Name: Weary
Gender: male
Age: 8
Weight: 15
Body Length: 17
Tail Length: 12
Eye Color: green
Pad Color: pink
Fur Color: black and white



Name: Diva
Gender: female
Age: 4
Weight: 11
Body Length: 20
Tail Length: 12
Eye Color: green
Pad Color: pink
Fur Color: gray, black, brown stripes with white patches

Name: K.C.
Gender: male
Age: 5
Weight: 16
Body Length: 24
Tail Length: 12
Eye Color: yellow
Pad Color: black
Fur Color: brown and black stripes, some white

Name: Lady
Gender: female
Age: 10
Weight: 9
Body Length: 17
Tail Length: 13
Eye Color: yellow
Pad Color: black
Fur Color: gray, brown, and white stripes

Name: Peau de Soie
Gender: female
Age: 15
Weight: 7
Body Length: 16
Tail Length: 13
Eye Color: green
Pad Color: pink
Fur Color: orange, black, and white

Name: Charcoal
Gender: male
Age: 11
Weight: 12
Body Length: 21
Tail Length: 13
Eye Color: yellow
Pad Color: black
Fur Color: black and white

Name: George
Gender: male
Age: 12
Weight: 15
Body Length: 21
Tail Length: 13
Eye Color: green
Pad Color: black
Fur Color: black and white

Name: Harmony
Gender: male
Age: 3
Weight: 12
Body Length: 24
Tail Length: 11
Eye Color: yellow
Pad Color: black
Fur Color: black

Name: Augustus
Gender: male
Age: 2
Weight: 10
Body Length: 21
Tail Length: 11
Eye Color: yellow, green, blue
Pad Color: pink and black
Fur Color: black and white

Name: Cleopatra
Gender: female
Age: 4
Weight: 7
Body Length: 18
Tail Length: 9
Eye Color: yellow
Pad Color: pink
Fur Color: black and white

TEACHER NAME	Lesson #
Amy Whicker	3

MODEL	CONTENT AREA	GRADE LEVEL
Visual Thinking Model	ELA/Social Studies	6th Grade

CONCEPTUAL LENS	LESSON TOPIC
Systems	African Heritage/Adaptation to Environment

LEARNING OBJECTIVES *(from State/Local Curriculum)*

CCSS.ELA-Literacy.W.6.1 – Write arguments to support claims with clear reasons and relevant evidence.
(c) Use words, phrases, and clauses to clarify the relationships among claims and reasons.
CCSS.ELA-Literacy.RH.6-8.7 – Integrate visual information (e.g. in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.
(8) Distinguish among fact, opinion, and reasoned judgment in a text.

SS.6.G.1.4 – Explain how and why civilizations, societies and regions have used, modified and adapted to their environments (e.g. invention of tools, domestication of plants and animals, farming techniques and creation of dwellings).
(Note: 6th Grade Social Studies focuses on societies in Africa, Asia, Europe and the Americas.)

THE ESSENTIAL UNDERSTANDING *(What is the overarching idea students will understand as a result of this lesson?*	THE ESSENTIAL QUESTION *(What question will be asked to lead students to "uncover" the Essential Understanding)*
Systems influence outcomes.	***How do systems influence outcomes?***

CONTENT KNOWLEDGE (What factual information will students learn in this lesson?)	PROCESS SKILLS (What will students be able to do as a result of this lesson?)

• African societies have historically shown adaptation to their environment, including:
  ○ communal food preparation (mortar/pestle style grinding)
  ○ dwelling construction to adapt to climate
  ○ clothing and headdresses
  ○ infrastructure to protect against wildlife/weather dangers
  ○ subsistence farming
• African heritage fosters a sense of community and interdependent relationships in providing basic human needs.
• The systems of family structure, cultural heritage, environment and genetics influence the outcome of a community's composition. These systems in turn influence how people within the community look and behave.
	• Students will be able to make observations on a "text" (work of art) and articulate these observations orally and in writing.
	• Students will be able to make inferences about the "text" using knowledge of African society, environment and history.
	• Students will connect the importance of heritage in creating community in African culture, specifically relating how survival skills strengthen interdependent relationships.
	• Students will be able to extend the connection between heritage and community in historic Africa to current societies, their community or their families.
	• Students will be able to connect how various systems influence outcomes in the work of art. Students will primarily focus on the systems of environment, culture and family structure in creating community and individuals, describing how these systems are interconnected orally and in writing.

GUIDING QUESTIONS
What questions will be asked to support instruction?
Include both "lesson plan level" questions as well as questions designed to guide students to the essential understanding

Pre-Lesson Questions:	During Lesson Questions:	Post Lesson Questions:

• What pictures in the art gallery do you find intriguing? Why? • What painting do you think Ibiyinka Alao is most famous for? Why? • What does it mean to "adapt to your environment"? • What evidence do you see of adaptation to environments in the artworks? • What painting do you think we will explore today as we study ancestry and heritage? • Do any of the paintings you have observed connect with our previous lessons? (i.e. Do you see any aspects of how genetics, environment, or culture have influenced a community or individual? Do you see any aspects of siblings like we analyzed in the litter of cats yesterday?)	• What do you think is going on in this picture? • What is your reasoning for saying that? • What else can you find that has not been shared/observed? • Do you observe any examples of adaptation to environment? (Based on student answers, the teacher may want to give some direction to structures, clothing, food preparation techniques, plants, sunshine, etc.) • What time period(s) and settings could this piece come from? How do you know? • What do you think the people are doing in the picture? How do you think they are feeling? • What do you think the artist wants to communicate to us? • What aspects of this painting are unique to African societies? • Are there any aspects that could also be seen in other cultures? • What systems do you observe in shaping this community? Is there a system that seems to be most important in the piece?	• What other objects/structures/people might be a part of this community that are not pictured here? • What do you think the artist is showing to us about the structure of this community? • What do you think the artist is showing to us about the importance of heritage and ancestry? • What aspects of your community or heritage is similar to this work of art? What would an artist paint to depict your community? • How do systems influence the outcome of this community? How do systems influence the outcomes of the individuals in the artwork? What systems are working interdependently to shape how this community functions? What is the role of genetics? Environment? Culture? Family structure?

DIFFERENTIATION

(Describe how the planned learning experience has been modified to meet the needs of gifted learners. Note: Modifications may be in one or more of the areas below. Only provide details for the area(s) that have been differentiated for this lesson.

Content	Process	Product	Learning Environment
A particular art piece, "A Long, Long Way from Home" by Ibiyinka was chosen for in-depth class analysis. His entire online art gallery will be used as a differentiation tool to allow for students to select other pieces of interest. (http://www.ibiyinka.com /art/a_long_long_way_ from_home.htm)	The Visual Thinking model requires students to think critically about a piece and develop observation skills. The teacher will ask them to look past the obvious to make inferences, as well as listen to others' statements for validity.	Students will be able to select a work of art or create their own work of art that represents a connection between heritage and community for their own community. Presentations will be made orally or through writing by student choice.	

PLANNED LEARNING EXPERIENCES

(What will the teacher input? What will the students be asked to do? For clarity, please provide detailed instructions)

Engage and Connect - *This phase focuses on piquing students' interest and helping them access prior knowledge. This is the introduction to the lesson that motivates or hooks the students.*

The students will be introduced to the work of Ibiyinka Alao by exploring his online gallery in partners. To introduce his work, the teacher will have a slideshow of his paintings scrolling while students enter the classroom. The teacher will ask students to pick one piece as their "initial favorite" as the presentation slides. Students will share this favorite with the class before transitioning to looking at the artwork on computers. (Slideshow attached)
(http://www.ibiyinka.com/gallery.htm)

Students will be given time to explore the artwork using personal computers as well. The teacher will inform the students that one painting will be used today for further analysis but will not be revealed until later. The teacher will guide the partner discussion by displaying these questions on the board while students are exploring and discussing their findings.

*What painting is most interesting to you? Why?
*What painting do you think Ibiyinka Alao is most famous for? Why?
*What painting do you think we will explore today as we continue our study of ancestry? Why did you choose that piece?
*What are the similarities and differences between analyzing a piece of artwork and our cat data investigation yesterday?
*Do you see any evidence of adaptation to environments? What does it mean to "adapt"?

After giving students sufficient exploration and partner discussion time, the teacher will ask for students to share their thoughts. (See pre-lesson questions.) The teacher will also emphasize the need to listen to their peers' statements during the lesson today. Emphasis will be placed on the need for reasonable judgments and providing of evidence. (Time might need to be spent discussing adaptation to environment based on student prior knowledge before transitioning to the next phase.)

The teacher will transition the discussion by revealing the piece to be investigated further, "A Long, Long Way from Home."
http://www.ibiyinka.com/art/a_long_long_way_from_home.htm

Explore - *In this phase, the students have experiences with the concepts and ideas of the lesson. Students are encouraged to work together without direct instruction from the teacher. The teacher acts as a facilitator. Students observe, question, and investigate the concepts to develop fundamental awareness of the nature of the materials and ideas.*

The teacher will give students various ways to view the artwork chosen for discussion, including a large display on the SmartBoard, exploration on personal laptops, and using phones/tablets with zoom features (depending on technology availability). The students will be given 3-5 minutes to observe the painting silently and record observation "phrases" on paper. (The teacher will emphasize the importance of recording observations in a short format so that time is not wasted writing full sentences. The phrases are meant only to remind a student of their personal thoughts once the whole class discussion occurs.)

After the 3-5 minutes of silent observation, the teacher will ask students to share observations made, recording these on the SmartBoard for later viewing.

The teacher will use the "During Lesson" questions to engage students in discussing the artwork. Students will also be asked to record statements made by their peers that resonated with them for later discussion. The teacher will also ask students to elaborate on observations when necessary to emphasize the need for evidence when making a reasonable judgment.

Explain - *Students communicate what they have learned so far and figure out what it means. This phase also provides an opportunity for teachers to directly introduce a concept, process, or skill to guide students toward a deeper understanding.*

Based on student responses, the teacher will ask students to go deeper into analysis of the work of art, giving students time to discuss through "Think-Pair-Share" and adequate wait time. The teacher will emphasize the importance of these questions to the essential understanding:

- How would you describe this community?
- Do you see any evidence of people adapting to their environment? (Students may need direction to notice adaptation to hot climate, food preparation, lack of technology, etc.)
- How does the need to adapt influence the community?
- What aspects of this painting are unique to African culture?
- Are there any aspects that could also be seen in other cultures?
- How are established systems influencing outcomes in this community?

Once students have had adequate discussion time, they will be asked to pause their conversations and elaborate on aspects of adaptation to environment viewed in this artwork, specifically related to African culture. Students will complete a concept map with large categories of their choice that represent adaptation, such as clothing, structure, food, farming, relationships, etc. Supporting details from the artwork will be listed below each category. This concept map will help students practice creating an organizational product in preparation for a more complex map in the next phase. (See sample concept map below. The teacher may provide a beginning category and detail to get students to begin to gather thoughts.)

Adaptation of Structure

- Huts for Climate/Adapt to heat
- Wall for Protection from Elements/Animals
- Structure of Community Roles/Jobs - Only women pictured but men's roles can be inferred

Adaptation of Relationships

- Women Working together to prepare food; Child also pictured
- Different Jobs (other women bringing in water - appear to be younger)
- Infer that Men have other roles outside of Community

Adaptation of Physical Objects

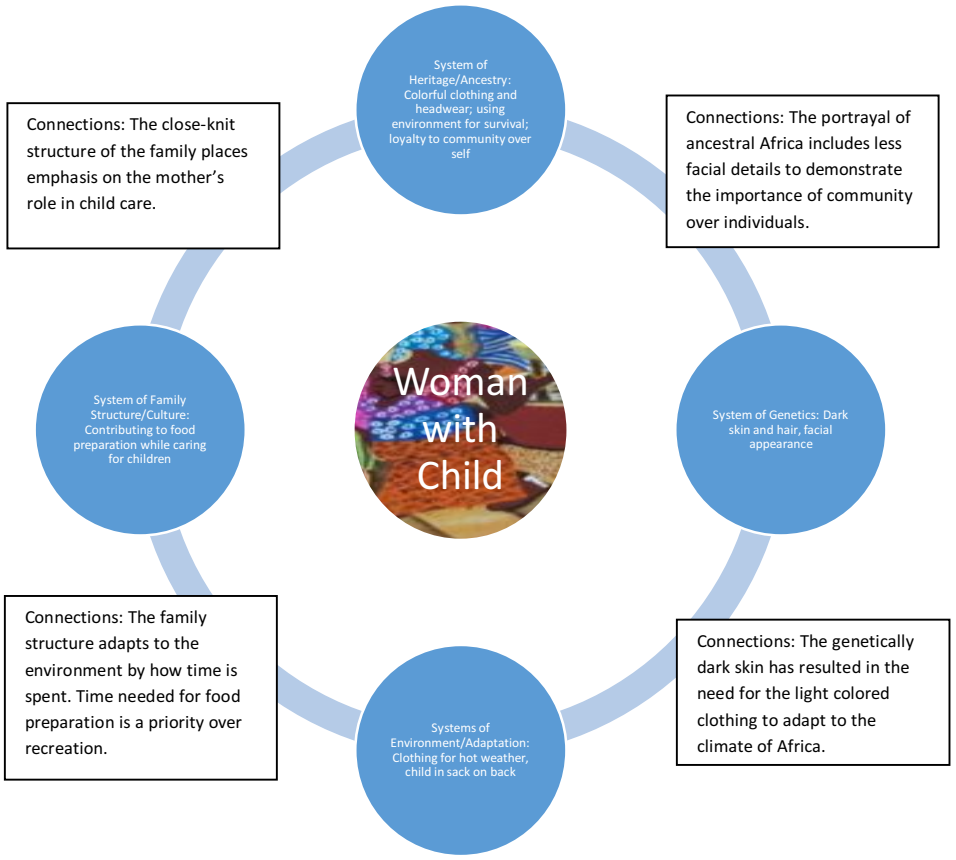
- Clothing - Style of dress/colors; Headwear
- Morter and Pestle for food preparation
- Using natural materials for building homes/fire

Elaborate —*Allow students to use their new knowledge and continue to explore its implications. At this stage students expand on the concepts they have learned, make connections to other related concepts, and apply their understandings to the world around them in new ways*

Following the concept map creation, the teacher will ask students to begin connect the adaptation map with generalizing the overarching systems that are at work in this painting. The teacher may use these questions to focus the discussion, if time allows. (Teacher tip: The above graphic organizer may be completed as a whole group so that more time is given for the second organizer.)

- How does the need to adapt influence the community?
- What aspects of this painting are unique to African culture?
- Are there any aspects that could also be seen in other cultures?
- What systems can you observe in this painting? (Remind students of aspects explored thus far, such as the physical and emotional traits explored, genetic connections between the cats, etc.) Is there one system that seems to be most influential?
- Can you think of a way to show how these systems of environment, culture, family, and genetics connect?

Students will be asked to connect the work of art with the systems of heredity, genetics, environment, and culture. They will be challenged to see systems that are independent and interdependent with each other. Students will be asked to choose an individual from the painting and infer what systems have influenced the person's composition, including appearance, behavior, role, etc. The teacher will encourage students to take some liberties with inferring information about the painting and what other aspects of the culture/family might occur outside of this scene. Students will be asked to write connection statements between the systems, if applicable. This could be done as a partnership or group, depending on teacher choice. Students could create a graphic organizer on chart paper or using computer software. After sufficient time, the teacher will ask students to share their graphic organizer with the class through an open discussion. (Sample shown below.)



Evaluate: *This phase assesses both learning and teaching and can use a wide variety of informal and formal assessment strategies.*

The teacher will task students with finding another piece of art that would demonstrate the heritage of their personal family or their larger community/country. Students may also create their own unique artwork by choice. For those that might want to look online for modern art or other galleries, these resource sites may be used. Students will present orally or in writing how their artwork shows their heritage, ancestry, or community and the influence it has had on them as an individual. (This could also be incorporated as one of the "Choice Board" activities for the week if students are interested in creating a more elaborate work of art.)

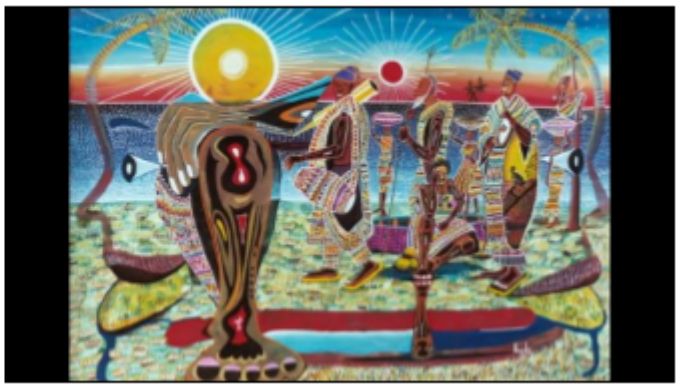
https://vmfa.museum/collections/results/?fwp_collection=7a81a8d5629a5d6d92fae5c2afb13c82
http://heritagesart.com/
http://www.contemporaryartgalleryonline.com/

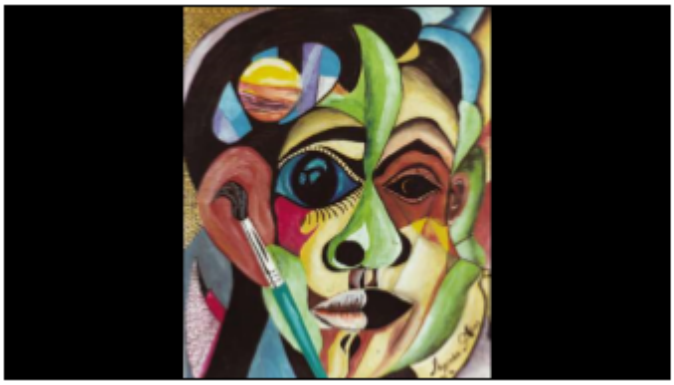
Handouts for Lesson #3:

Works of Ibiyinka Alao

Questions to Consider…

- What painting is most interesting to you? Why?
- What painting do you think Ibiyinka Alao is most famous for? Why?
- What painting do you think we will explore today as we continue our study of ancestry? Why did you choose that piece?
- What are the similarities and differences between analyzing a piece of artwork and our cat data investigation yesterday?





TEACHER NAME	Lesson #
Amy Whicker	4

MODEL	CONTENT AREA	GRADE LEVEL
Creative Problem Solving/Performance Task	Language Arts/Social Sciences	7th Grade

CONCEPTUAL LENS	LESSON TOPIC
Systems	Biological Profiling

LEARNING OBJECTIVES *(from State/Local Curriculum)*

Language Arts: RH.6-8.5
Describe how a text presents information (e.g., sequentially, comparatively, causally).
Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

Science: 7.L.2.3
Explain the impact of the environment and lifestyle choices on biological inheritance (to include common genetic diseases) and survival.

THE ESSENTIAL UNDERSTANDING *(What is the overarching idea students will understand as a result of this lesson?*	THE ESSENTIAL QUESTION *(What question will be asked to lead students to "uncover" the Essential Understanding)*
Systems influence outcomes.	***How do systems influence outcomes?***

CONTENT KNOWLEDGE (What factual information will students learn in this lesson?)	PROCESS SKILLS (What will students be able to do as a result of this lesson?)
• **A biological/historical profile includes, but is not limited to, information about an individual's birth/death, physicality/photo, family, culture, career, and residences.** • **A profile can differ in format and information included based on audience and purpose.** • **An individual's outcomes (physical/emotional traits & tendencies) are influenced by varying systems of environment, lifestyle choices, genetics, and culture. The degree of each system's influence is based on individualistic factors.**	• **Students will be able to synthesize and organize personal information in relation to their past, present, and future.** • **Students will be able to communicate personal information for a target audience and purpose.** • **Students will be able to summarize what systems have influenced their person, generalizing their ideas into a concise conclusion.** • **Students will be able to determine degrees of impact on their personhood, including environment, biology, and lifestyle choices.** • **Students will be able to communicate ideas orally and through writing.**

GUIDING QUESTIONS
What questions will be asked to support instruction?
Include both "lesson plan level" questions as well as questions designed to guide students to the essential understanding

Pre-Lesson Questions:	During Lesson Questions:	Post Lesson Questions:

• What is a profile? What is their purpose in our society? • Why are profiles important in learning about people that have come before us? • What information is necessary or helpful in learning about a person? What information is not necessary? • How could a profile be used to determine what systems have influenced a person's life? • (Following the viewing of profiles on website): How would you describe the profiles on the website? What facts did you discover about your person? What questions did you have about the profile? What would you recommend to the website creator for improvement?	• What information and profile format do you think will be appropriate for Mars' citizens? • How is the profile affected by the audience and purpose? • What are the benefits and limitations of using the "Facebook-style" format? • How will you ensure that the systems that have influenced you are evident in the profile? • How can you summarize your profile into a "slogan" about the systems that have influenced you? • How can you ensure that a profile depicts a person accurately?	• What format did you find to be most effective in your profile and those of your peers with our target audience in mind? • What positive aspects did you observe in the profiles of your peers? What areas of improvement could be made? • What information did you find to be essential to communicating what systems have influenced your outcomes as a person? What information could be added to make your profile more effective? • How can you summarize/generalize your profile into a "slogan" that reveals what systems have influenced your life outcomes? What are the challenges and limitations of generalizing into one "slogan"? • What statements from you or your peers proved most effective in summarizing how systems have influenced outcomes? What made these particularly effective? • (EU) How do systems influence outcomes? How can this be applied across disciplines/concepts?

DIFFERENTIATION

(Describe how the planned learning experience has been modified to meet the needs of gifted learners. Note: Modifications may be in one or more of the areas below. Only provide details for the area(s) that have been differentiated for this lesson.

Content	Process	Product	Learning Environment
	Students will be tasked with creating a profile that requires multiple perspectives – viewing themselves in past, present, and future as well as thinking of how a third party (citizens of Mars) may view them historically. This will require critical thinking and predicting.	**Students' profile creations can vary in format and "look", including a colorful poster, paper/pencil portfolio, or a computer/website application software. This will allow students to be creative in thinking about how the information could be presented for the targeted audience. The Choice Board activities, as well, vary in product based on student selection. The products vary by interview, personal written response, synthesis after viewing a video, or creation of family tree.**	

PLANNED LEARNING EXPERIENCES

(What will the teacher input? What will the students be asked to do? For clarity, please provide detailed instructions)

Engage and Connect - *This phase focuses on piquing students' interest and helping them access prior knowledge. This is the introduction to the lesson that motivates or hooks the students.*

Optional Hook: If time allows, put pre-printed profiles on students' desks before beginning. Choose people that are well-known, such as musicians and actors that would resonate with them. You could also have a collection on a front table and have students select a profile as they walked into the classroom. This will give students time to hypothesize about the lesson content for the day.)

Engage students in "biological profiling" by providing them with the website https://www.biography.com/people. Allow students to choose a person of interest or use a profile from the "Hook". Have students complete a quick response card about the person selected to begin thinking of their own profile. The template below could be displayed on the board for students to complete in their journals or could be printed for students to complete.

List three facts you learned from the profile that are crucial to identifying this person as unique from others.	List three questions you have about this person's life/background that are not answered in this profile.	List two recommendations that would improve this profile in some way (visually, in content, etc.).

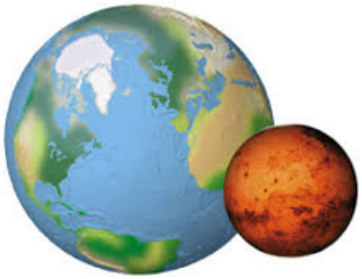
Once students have had time to complete the chart, have students share responses. Depending on time and student readiness, complete a chart together that shows the aspects that the various profiles had in common. For example, all the profiles may have included birth and death dates as crucial pieces of information. All or most of the profiles may have left out information about places of residence or all may have needed improvement in a layout that was conducive to quick gathering of information. (Use the "Pre-Lesson Questions" before proceeding to ensure students have necessary background information.)

Explore - *In this phase, the students have experiences with the concepts and ideas of the lesson. Students are encouraged to work together without direct instruction from the teacher. The teacher acts as a facilitator. Students observe, question, and investigate the concepts to develop fundamental awareness of the nature of the materials and ideas.*

The teacher will transition to the performance task by providing students with the instruction sheet (attached and pictured below). The teacher will pique students' interest by telling them about their task of creating their own biological profile and capturing their life (past, present, future) in one product.

Performance Task:

Imagine it is the year 2200 and many humans have moved to Mars to escape the extreme weather conditions on Earth. Students on Mars are viewing historical profiles to research Earth's history. They have chosen you as one of their featured "Earthlings" for the project. What do you think your profile would like? What information would they want to know about you, your life, and your origins?



Create a "Facebook-style" profile that features key biological information and interesting extras that might set you apart as unique from others. You can use a poster, portfolio, or digital software to create your product. Required sections include: physical features with photo or self-portrait, hobbies/interests, family information, and cultural background. You may want to also include information about ancestry, education, and possible causes of death. Keep in mind that this profile should include your entire life span, so be creative with thinking about what your future may hold!

Create a "slogan" that summarizes what has most influenced who you are!

The teacher will show a video about the potential of life on Mars to pique students' interest and get them engaged on the realistic assignment. (Show clip from YouTube TED Talk, "Your kids might live on Mars. Here's how they'll survive." https://www.youtube.com/watch?v=t9c7aheZxls)

Help students to brainstorm first what information they think would be most important to include on their profile and how it could possibly be presented. (See "During Lesson" questions.)

Provide students with possible "Facebook-style" template but encourage students to also be creative. The template is not a requirement but could provide some guidance for students who need assistance with organization. Discuss with students what parts of the "Facebook-style" may be needed and what may be unnecessary or redundant. (Attached and pictured below.)

Explain - *Students communicate what they have learned so far and figure out what it means. This phase also provides an opportunity for teachers to directly introduce a concept, process, or skill to guide students toward a deeper understanding.*

Students will be asked to share their profiles with their peers through a gallery walk. Using post-it notes, students will provide feedback for their peers, commenting on a positive aspect and an area of improvement. (Students who completed their work on a computer could print their profile or have peers view their work on the computer screen.) Students will then have the opportunity to read their feedback, ask questions and revise their profile based on the feedback. Students will be able to continue this format of peer feedback, reflection, and editing as they finish their choice board assignments. Depending on time, students may use this time to complete their choices while others are completing their profiles before the next two phases of the lesson.

Elaborate —*Allow students to use their new knowledge and continue to explore its implications. At this stage students expand on the concepts they have learned, make connections to other related concepts, and apply their understandings to the world around them in new ways*

Students will have the opportunity to summarize and generalize their learning from the week about the essential understanding, "Systems influence outcomes." Students will complete their profile with a statement regarding their own personal connection about what influences the outcome of their own personhood. (Examples: "Genetics and environment influenced my mathematical career." "Family and culture influenced my interests in piano and horses.") Students will share this "slogan" with the class for feedback and possible revision. If time allows, students could take their "slogan" to summarize their learning for the week and create a bumper-sticker style artwork.

Evaluate: *This phase assesses both learning and teaching and can use a wide variety of informal and formal assessment strategies.*

The teacher will provide the rubric for the performance task and have students grade their own profile and the profile of one peer once they have been given time to receive feedback and edit. They will be required to provide written feedback for themselves in self-reflection and discuss with their partner why they chose each score for the categories.

Criteria	Ineffective – 0 points	Marginally Effective – 1 point	Moderately Effective – 2 points	Highly Effective – 3 points
Portfolio Layout and Format Choices **Points: _____**	Ineffective format chosen; Lack of organization of information; Format chosen does not communicate what systems have influenced outcome	Somewhat effective format; Organization is present but needs improvement; Format somewhat reveals what systems have influenced outcome	Generally effective format; Organization is present and effective; Format chosen reveals what systems have influenced outcome	Highly effective format chosen; Organization is present and highly effective; Format chosen reveals what systems have influenced outcomes with sophistication and thoughtful planning
Information Inclusion and Elaboration: Physical and Genetic Features **Points:_____**	Information included is lacking depth and elaboration; Information regarding physical and genetic features is missing key aspects	Information included is partially complete in depth and elaboration; Information regarding physical and genetic features needs improvement and more details	Information included is sufficient in depth and elaboration; Information regarding physical and genetic features is representative and provides complete details	Information included is thorough in depth and elaboration; Information regarding physical and genetic features is exceptionally clear, complete and insightful in details
Information Inclusion and Elaboration: Cultural and Family Information **Points:_____**	Information included is lacking depth and elaboration; Information regarding cultural and family information is missing key aspects	Information included is partially complete in depth and elaboration; Information regarding cultural and family information needs improvement and more details	Information included is sufficient in depth and elaboration; Information regarding cultural and family information is representative and provides complete details	Information included is thorough in depth and elaboration; Information regarding cultural and family information is exceptionally clear, complete and insightful in details

Information Inclusion and Elaboration: Life Events and Predictions **Points:_____**	Information included is lacking depth and elaboration; Information regarding life events and predictions is missing key aspects and reasonable thoughts	Information included is partially complete in depth and elaboration; Information regarding life events and predictions needs improvement and more complex thought	Information included is sufficient in depth and elaboration; Information regarding life events and predictions is reasonable and provides evidence of complex thought	Information included is thorough in depth and elaboration; Information regarding life events and predictions is exceptionally reasonable and provides evidence of a high-level of analysis and complex thought
Slogan/Connection to Systems **Points:_____**	Slogan is absent or is unrelated to the influence of systems; Provides no connection to essential understanding of how systems have influenced the outcome of personhood	Slogan is present and loosely connects or alludes to what systems have influenced the profile outcomes; Connection is not fully supported by the information in the profile	Slogan is present and sufficiently connects the influence of systems to the profile outcomes; Connections are fully supported by information in the profile and show evidence of complex thought	Slogan is present and reveals a complex connection between the influence of systems to the profile outcomes; Connections are fully supported and take into account the interconnectedness of the systems through sophisticated thought
Presentation/Persuasive for Target Audience **Points:_____**	Profile created without information needed for target audience or with irrelevant information; No evidence of sensitivity to what would be important for Mars' citizens	Profile created with partial or incomplete thought to audience; Some information included represents what would be important to Mars' citizens but improvement is needed	Profile created with sufficient thought to audience; Information included is targeted for Mars' citizens; Thought to audience is evident through effective planning	Profile created with exemplary thought to audience; Information included is clearly targeted for Mars' citizens and represents sophisticated planning and thought

Comments/Rationale:

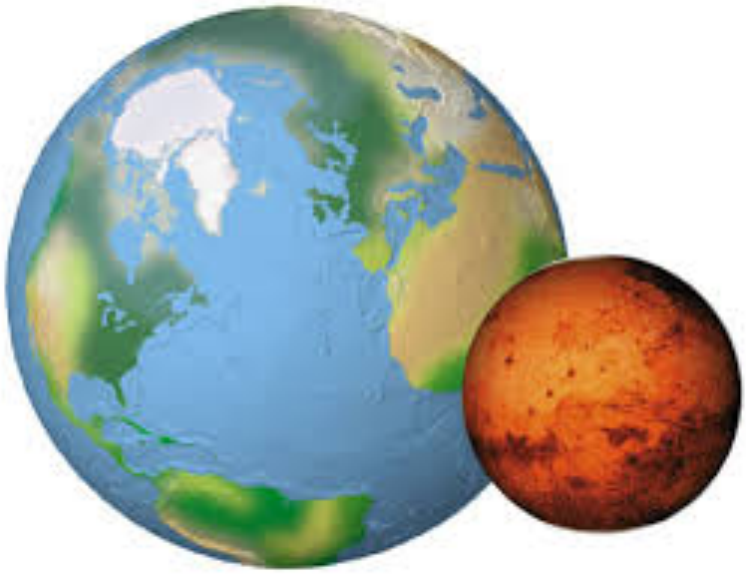
_____

_____

_____

Performance Task:

Imagine it is the year 2200 and many humans have moved to Mars to escape the extreme weather conditions on Earth. Students on Mars are viewing historical profiles to research Earth's history. They have chosen you as one of their featured "Earthlings" for the project. What do you think your profile would like? What information would they want to know about you, your life, and your origins?



Create a "Facebook-style" profile that features key biological information and interesting extras that might set you apart as unique from others. You can use a poster, portfolio, or digital software to create your product. Required sections include: physical features and description with photo or self-portrait, hobbies/interests, family information, cultural background, and life events. You may want to also include information about ancestry, education, and possible causes of death. Keep in mind that this profile should include your entire life span, so be creative with thinking about what your future may hold!

Create a "slogan" that summarizes what has most influenced who you are!

Farcebook.us™

home search browse invite help logout

_____'s Profile

Name: _____

Networks: _____
Sex: _____
Birthday: _____
Hometown: _____
Relationship Status: _____
Interested in: _____
Looking For: _____
Political Views: _____
Religious Views: _____

▼ Mini-Feed

See All

Date: _____

▼ Status

___ update(s) See All

(Date: _____)

(Date: _____)

▼ Friends

_____ friends See All

▼ Photos

___ albums See All

▼ Groups

___ groups See All

Member of:

We're Related

___ relatives See All

Causes

___ featured cause(s) Gifts

view donate
view donate
view donate
view donate
view donate
view donate

▼ Information

Contact Info
Current Address: _____
Residence: _____

Personal Info
Activities: _____
Interests: _____
Favorite Music: _____
Favorite Books: _____
Favorite Quotations: _____
About Me: _____

▼ Education and Work

Education Info
College: _____
High School: _____

Work Info
Employer: _____
Position: _____
Time Period: _____
Location: _____

▼ Wall

_____ wrote on _____ at _____

_____ wrote on _____ at _____

_____ wrote on _____ at _____

_____ wrote on _____ at _____

Show Older Posts

V. Unit Resources

Karnes, F. A. & Stephens, K.R. (2008). Achieving Excellence: Educating the Gifted and Talented. Upper Saddle River, NJ: Pearson Education.
This text features more details about the lesson models used, such as the Taba concept development, Bruner's structure of the intellect, visual thinking strategies and the benefits of using choice boards.

http://www.ibiyinka.com/
This website features the works of art used in lesson three of the unit. The works of art can be explored by students to find pieces that interest them, show evidence of cultural adaptations, and demonstrate influence of societal systems.

http://learn.genetics.utah.edu/content/basics/activities/
This website features activities that can engage students in thinking about their own personal traits and the traits of their family members. Two of the activities featured in the unit, "Traits versus Traditions" in lesson one and "Handy Tree" on the choice board are housed at this site.

http://heritagesart.com/
http://www.contemporaryartgalleryonline.com/
These websites are utilized in lesson four to encourage students to choose a work of art that represents systems of influence in their own lives. While one is focused on African American art, students are encouraged to look past skin color at the image's deeper contexts.

file:///C:/Users/ajwhicker/Desktop/AIG%20Program/Ancestry%20Dot%20What%20PDF.pdf
This link provides a PDF copy of the PowerPoint file used in course. Many of the slides and questions were adjusted based on student needs and time constraints. Take into consideration what questions would be appropriate and useful for your group based on age and areas of giftedness.
(PowerPoint file if in network: https://wsfcsk12nc-my.sharepoint.com/personal/ajwhicker_wsfcs_k12_nc_us/_layouts/15/guestaccess.aspx?docid=1e7cec37b9942403580b4786368de9c59&authkey=AR_AVA8w8yIkjXWFzsiRS4w)

Video Links Used:

- Lesson 1
  - https://www.youtube.com/watch?v=qyfWZZ7uPuE
  - https://app.discoveryeducation.com/learn/videos/93cd24b0-4b07-4ee1-b728-fb8d74c95307?hasLocalHost=false
- Lesson 2
  - https://www.youtube.com/watch?v=xbTqJiZ8nhA
  - https://www.youtube.com/watch?v=4E9xHI2rlKU
- Lesson 4
  - https://www.youtube.com/watch?v=t9c7aheZxls
- Choice Board:
  - https://www.youtube.com/watch?v=SM1ZFA2ziDY
  - http://www.findmypast.com/
  - https://libertyellisfoundation.org/passenger
  - https://www.youtube.com/watch?v=CBegsEzKvsI&t=3s
  - http://pbskids.org/dragonflytv/games/game_dogbreeding.html
  - https://www.youtube.com/watch?v=Y1PCwxUDTl8